CONTRACT

SPECIAL PROVISIONS

CSI-Inch/Pound

Project No:	**SP-70-1(34)15**
Name:	**I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE**
	BRIDGE PRESERVATION; POLYMER OVERLAY
County:	**SEVIER**
Bid Opening:	**August 19, 2003**
	Date

Revised: 10/30/2002

State-Purple Book With 8 ½" x 11" Plan Sheets

2002 - U.S. Standard Units (Inch-Pound Units) June 23, 2003

Table of Contents

SP-70-1(34)15

I. 2002 Standard Specifications

The State of Utah Standard Specifications for Road and Bridge Construction, U.S. Standard Units (Inch Pound Units) CSI Format, Edition of 2002 with Changes One and Two included applies on this project as a static Specification Book.

Refer to Part II (List of Revised Standard Specifications) and Part XIV (Special Provisions) for other project specific specifications.

II. List of Revised Standard Specifications

Change One – Included in 2002 Standard Specifications

Revised August 29, 2002

Section 00570 Articles 1.2 A 69, A 71 b (deleted)
Section 00727 Articles 1.1 D; 1.5 B; 1.9; 1.10; 1.16 B, C; 1.18 B
Section 01574 Articles 1.2 B
Section 02721 Articles 1.2 D (added), H (replaced), I (deleted);1.6 B1; 2.1 A Table 3; 3.2 C
Section 02741 Articles 3.8 E 2 a, b
Section 02821 Articles 3.1 A
Section 02892 Articles 1.5 A, B
Section 02936 Articles 1.4; 1.5 C
Section 03152 Articles 1.2 P, Q; 2.2 A, B
Section 05120 Articles 1.4 A (deleted), 3.3 A
Section 16525 Articles 1.6 A, B

Change Two – Included in 2002 Standard Specifications

Revised December 19, 2002

Section 01561 Article 3.1 A
Section 02075 Article 2.7 A
Section 02372 Article 2.1 A 4
Section 02455 Article 3.3 B 2
Section 02785 Article 3.2 C
Section 02861 Article 3.3 A
Section 03055 Articles 1.2 P (inserted), 2.3 B, 2.4 (deleted), 2.7 A 1 a-e (added), 2.7 B 2 (added), 2.8 A 1 a, 2.8 A 2 (deleted), 2.9 A3, 3.2 A Table, 3.2 C, 3.7 A 3, 3.8 C 1, 3.9 A-B, 3.10, 3.11 B 1, 3.11 B 3
Section 07922 Article 2.1 Table 1

Change Three

Revised February 27, 2003

Section 01355 Article 1.3 A 3
Section 01721 1.4 C deleted and moved to Measurement and Payment document
Section 02222 Changed title from Site Demolition-Pavement to Site Demolition - Concrete, A, 3.2 Title, 3.2 A
Section 02224 New Specification
Section 02316 1.2 A, D, I added, 1.3 added, 1.7 B, C, D, E, F, G added, 3.9 A added
Section 02455 3.3 B 2 (corrected error from change two)
Section 02721 1.2 Related Sections added, 1.3 H and I added, 1.7 B, 1.7 F deleted, 2.1 B added, 2.2 deleted, 3.1 Title changed, 3.2 B reference added, 3.2 E added
Section 02741 1.4 C6a added, 1.4 H, Table 3, 2.4 A, 2.4 C, Table 9, 2.5 B 1-3, 2.5 B 4 added, 2.5 D, 3.1 Al deleted, 3.2 C3 added, 3.7 D1, 3.9 B4, 3.9 B5 added, 3.9 E note added
Section 02744 Entire Section deleted
Section 02745 1.4 A9
Section 02785 1.2 C and D added
Section 02892 Added Articles, 1.3 N, O, Y, 1.5 D, 2.4 I, 2.5 C, D, E, 2.6 B3 - B6, 2.6 C, 2.16, 2.17, 3.11 and Revised Articles 3.5 F and Table Number, 3.5 G and Table Number
Section 02896 2.1 A, B and 3.1 A drawing number corrected
Section 16525 1.2 H

Change Four

Revised April 24, 2003

Section 00555 1.18 added Table 1
Section 01280 1.2 K
Section 01282 1.13 B added, 1.13 G 2 deleted
Section 02222 1.2 B Title Changed
Section 02231 3.5 A
Section 02705 Title Changed, 1.1 A, 1.3 added, 3.1 Title changed, 3.1 A, 3.1 D moved, 3.2 added
Section 02741 3.7 B
Section 02747 Entire Section deleted
Section 02752 1.8 E 1
Section 02753 3.1 D 5 a, 3.3 D
Section 02842 2.4A
Section 02861 2.1 I
Section 02911 3.2 A 1
Section 02931 3.2 B
Section 03392 2.1 A 8-9
Section 03921 2.1 A 1, 2.1 C
Section 03922 2.1 B 1-2
Section 03923 2.1 A-B, 3.1 B
Section 03924 2.2 A-B

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Section 03935 2.1 A, 2.1 A 2
Section 07105 2.3 A
Section 13553 1.2 C Title Changed
Section 13554 1.1 A, 1.3 C and D added, 2.1 A, 2.1 F, 2.2 D 1, 2.2 D 2 deleted, 2.2 E, 2.2 H, 2.2 H 2, 2.2 H 3 deleted and renumbered, 3.1 B 3 added, 3.1 I

III. List of Revised Standard Drawings

Change One

Revised December 19, 2002

AT 7	Polymer Concrete Junction Box Details	12/19/2002
BA 1A	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 1B	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 3	Cast In Place Constant Slope Barrier	12/19/2002
BA 4B	Beam Guardrail Installations	12/19/2002
BA 4C	Beam Guardrail Anchor Type I	12/19/2002
CC 6	Crash Cushion Type E Sand Barrel Details	12/19/2002
DG 3	Maximum Fill Height and End Sections for HDPE And PVC Pipes	12/19/2002
DG 4	Pipe Culverts Minimum Cover	12/19/2002
EN 4	Temporary Erosion Control (Drop-Inlet Barriers)	12/19/2002
GW 1	Raised Median and Plowable End Section	12/19/2002
PV 2	Pavement Approach Slab Details	12/19/2002
SL 13	Traffic Counting Loop Detector Details	12/19/2002
SN 2	Flashing School Sign	12/19/2002
SN 4	Flashing Stop Sign	12/19/2002
SN 5	Typical Installation For Milepost Signs	12/19/2002
SN 8	Ground Mounted Timber Sign Post (P1)	12/19/2002
ST 1	Object Marker "T" Intersection and Pavement Transition Guidance	12/19/2002
ST 7	Pavement Markings and Signs at Railroad Crossings	12/19/2002
SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/2002
SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/2002
SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/2002

Change Two

Revised February 27, 2003

GW 2	Concrete Curb and Gutter	02/27/2003
GW 5	Pedestrian Access	02/27/2003

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Change Three

Revised April 24, 2003

AT 7	Polymer-Concrete Junction Box Details	04/24/2003
CB 2	Curb Inlet Catch Basin	04/24/2003
CC 7	Grading & Installation Details Crash Cushion Type F	04/24/2003
CC 8	Grading & Installation Details Crash Cushion Type G	04/24/2003
CC 9A	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
CC 9B	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
EN 2	Temporary Erosion Control (Silt Fence)	04/24/2003
GW 2	Concrete Curb and Gutter	04/24/2003
SN 12B	Ground Mounted Sign Installation Details	04/24/2003

IV. Materials Minimum Sampling and Testing

Follow the requirements of the Current Materials Minimum Sampling and Testing Manual:

Materials Minimum Sampling and Testing Manual reference can be found from the UDOT Web Site at:
http://www.dot.utah.gov/esd/Manuals/Materials/MaterialsSampling.htm

For UDOT employees the Manual can also be found on the Shared Drive at:
\Shared\Engineering Services\Manuals\Materials (W drive for the Complex and R drive for the Regions)

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V. Notice to Contractors

NOTICE TO CONTRACTORS

Sealed proposals will be received by the Utah Department of Transportation UDOT/DPS Building (4th Floor), 4501 South 2700 West, Salt Lake City, Utah. 84114-8220, until 2 o'clock p.m. Tuesday, August 19, 2003, and at that time the download process of bids from the USERTrust Vault to UDOT will begin, with the public opening of bids scheduled at 2:30 for BRIDGE PRESERVATION; POLYMER OVERLAY of I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE in SEVIER County, the same being identified as State Project No: SP-70-1(34)15.

Federal Regulations:
Wage Rate Non-Applicable.

Project Location: 0.585 Miles of Route: 0070 from R.P. 7.87 to R.P. 14.70

The principal items of work are as follows (for all items of work see attachment):
Epoxy-Urethane Polymer Crack Treatment and Waterproofing Overlays for Bridge Decks
Traffic Control
Relief Joint Crack Sealing

The project is to be completed: in 30 Working Days.

Other Requirements:
All project bidding information, including Specifications and Plans, can be viewed, downloaded, and printed from UDOT's Project Development Construction Bid Opening Information website, http://www.dot.utah.gov/cns/bidopeninfo.htm. To bid on UDOT projects, bidders must use UDOT's Electronic Bid System (EBS). The EBS software and EBS training schedules are also available on this website.

Project information can also be reviewed at the main office in Salt Lake City, its Region offices, and its District offices in Price, Richfield, and Cedar City.

Project Plans cannot be downloaded or printed from the website unless your company is registered with UDOT. Go to UDOT's website to register. Unregistered companies may obtain a **CD**, that contains the Specifications and Plans, from the main office, 4501 South 2700 West, Salt Lake City, (801) 965-4346, for a fee of $20.00, plus tax and mail charge, if applicable, none of which will be refunded.

Prequalification of bidders is required. Prior to submitting a bid, the bidder must have on file with the Utah Department of Transportation a completed and approved contractor's application for prequalification. Department processing time is 10 working days from receipt of properly executed documentation.

As required, a contractor's license must be obtained from the Utah Department of Commerce.

Each bidder must submit a bid bond from an approved surety company on forms provided by the Department; or in lieu thereof, cash, certified check, or cashier's check for not less than 5% of the total amount of the bid, made payable to the Utah Department of Transportation, showing evidence of good faith and a guarantee that if awarded the contract, the bidder will execute the contract and furnish the contract bonds as required.

The right to reject any or all bids is reserved.

If you need an accommodation under the Americans with Disabilities Act, contact the Construction Division at (801) 965-4346. Please allow three working days.

Additional information may be secured at the office of the Utah Department of Transportation, (801) 965-4346.

Dated this 02nd day of August, 2003.

UTAH DEPARTMENT OF TRANSPORTATION
John R. Njord, Director

Revised Date: 10/30/2002

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VI. EQUAL OPPORTUNITY (STATE PROJECTS)

Selection of Subcontractors, Service Providers, Procurement of Materials and Leasing of Equipment:

Do not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

Notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. Use best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Obtain lists of DBE construction firms from SHA personnel.

Use best efforts to ensure subcontractor compliance with their EEO obligations.

Selection of Labor:

During the performance of this contract, do not discriminate against labor from any other State, possession, or territory of the United States.

Employment Practices:

During the performance of this contract, the Contractor agrees as follows:

Do not discriminate against any employee or applicant for employment because of race, religion, sex, color, national origin, age, or disability. Take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, sex, color, national origin, age, or disability. Such action includes, but is not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Department of Transportation setting forth the provisions of this nondiscrimination clause.

In all solicitations or advertisements for employees state that all qualified applicants receive consideration for employment without regard to race, religion, sex, color, national origin, age, or disability.

Send to each labor union or representative of workers that the Contractor has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State Department of Transportation advising the said labor union or worker' representative of the commitments under this section and post copies of the notice in conspicuous places available to employees and applicants for employment.

In the event of noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further State contracts.

Include the provisions of this Section in every subcontract or purchase order so that such provision will be binding upon each Subcontractor or vendor. Take such action with respect to any subcontract or purchase order as the State Department of Transportation may direct as a means of enforcing such provisions including sanctions for noncompliance.

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VII. Bidding Schedule

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 8/19/2003 **Region:** REGION 4
Project Number: SP-70-1(34)15 **County:** SEVIER
Project Name: I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE
Description: BRIDGE PRESERVATION; POLYMER OVERLAY
Funding: STATE

#	Item	Description	Quantity	Unit
20 - STRUCTURES				
	Description: C-685, F-402, F-403			
1	012850010	Mobilization	1	lump sum
2	015540005	Traffic Control	1	lump sum
3	027650050	Pavement Marking Paint	19	gallon
4	03371000*	Epoxy-Urethane Polymer Crack Treatment and Waterproofing Overlays for Bridge Decks	63000	square foot
5	03381000*	Clear Penetrating Concrete Sealer for Bridges	3090	foot
6	079220010	Relief Joint Crack Sealing	530	foot

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Measurement and payment. Read all related documents carefully.

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VIII. Measurement and Payment

June 15, 2003

MEASUREMENT AND PAYMENT

SP-70-1(34)15

The Department will measure and pay for each bid item as detailed in this section. Payment is contingent upon acceptance by the Department.

Items are listed by Specification and in tables as follows:

Item #	Bid item number	Bid Item Name	Unit of measurement and payment
Additional information goes here.			

1	**012850010**	**Mobilization**	**Lump sum**
	Payment	**Amount Paid**	**When Paid**
	First	The lesser of 25% of Mobilization or 2.5% of contract	With first estimate
	Second	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 5% of contract
	Third	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 10% of contract
	Fourth	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 20% of contract
	Final	Amount bid in excess of 10% of contract price.	Project Acceptance-Final

2	**015540005**	**Traffic Control**	**Lump Sum**
	Payment	**Amount Paid**	**When Paid**
	One	25% of the bid item amount	With first estimate
		Remaining portion of bid item paid as a percentage of the contract completed	With each estimate

3	**027650050**	**Pavement Marking Paint**	**Gallon**
In place, Payment: A. The Department will not pay for removal of unauthorized, smeared, or damaged markings.			

4	**03371000***	**Epoxy-Urethane Polymer Crack Treatment and Waterproofing Overlays for Bridge Decks**	**Square Feet**
The price will be full compensation for all work including, but not limited to, striping removal, pothole patching, shot-blasting, applying polymer overlay and aggregate.			

5	**03381000***	**Clear Penetrating Concrete Sealer for Bridges**	**Feet**
Of surface covered.			

6	**079220010**	**Relief Joint Crack Sealing**	**Feet**

IX. PDBS Project Summary Report

Summary Report

Project: SP-70-1(34)15 **Version: 2**

I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE

Detail	Alt Group	Alt #	Description
20 - STRUCTURES	0	0	C-685, F-402, F-403

Item Number	Description	Qty	Unit
012850010	Mobilization	1	Lump
015540005	Traffic Control	1	Lump
027650050	Pavement Marking Paint	19	gal
03371000*	Epoxy-Urethane Polymer Crack Treatment and Waterproofing Overlays for Bridge Decks	63,000	sq ft
03381000*	Clear Penetrating Concrete Sealer for Bridges	3,090	ft
079220010	Relief Joint Crack Sealing	530	ft

X. PDBS Detailed Stationing Summaries Report

Detailed Report

SP-70-1(34)15 **Version: 2**

I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE

20 - STRUCTURES **Alt Group: 0** **Alt #: 0** **C-685, F-402, F-403**

Item Number	Description	Use Qty	Unit
027650050	**Pavement Marking Paint**	19	gal

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
	C-685				12.4	E.B. & W.B. (1049ft./190)2 + (1049ft./760) = 12.4 gal.
	F-402				3.2	E.B. & W.B. (268ft./190)2 + (268ft./760) = 3.2 gal.
	F-403				2.7	E.B. & W.B. (225ft./190)2 + (225ft./760) = 2.7 gal.
					18.3	

Item Number	Description	Use Qty	Unit
03371000*	**Epoxy-Urethane Polymer Crack Treatment and Waterproofing Overlays for Bridge I**	63,000	sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
E.B.	C-685				23,766.3	552.1ft. x 40.8ft. = 23766.3 sq. ft.
E.B.	F-403				4,593.4	112.5ft. x 40.8ft. = 4593.4 sq. ft.
E.B.	F-402				5,471.2	134ft. x 40.8ft. = 5471.2 sq. ft.
W.B.	C-685				19,070.9	467.1ft. x 40.8ft. = 19070.9 sq. ft.
W.B.	F-402				5,471.2	134ft. x 40.8ft. = 5471.2 sq. ft.
W.B.	F-403				4,593.4	112.5ft. x 40.83ft. = 4593.4 sq. ft.
					62,966.4	

Item Number	Description	Use Qty	Unit
03381000*	**Clear Penetrating Concrete Sealer for Bridges**	3,090	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
E.B.	C-685				1,164.2	582.1ft. x 2 = 1164.2 ft.
E.B.	F-402				268.0	134ft. x 2 = 268 ft.
E.B.	F-403				225.0	112.5ft. x 2 = 225 ft.
W.B.	C-685				934.2	467.1ft. x 2 = 934.2 ft.
W.B.	F-402				268.0	134ft. x 2 = 268 ft.
W.B.	F-403				225.0	112.5ft. x 2 = 225 ft.
					3,084.4	

Detailed Report

SP-70-1(34)15 **Version: 2**

I-70; SIX BRIDGES FROM MILL CREEK TO CLEAR CREEK INTERCHANGE

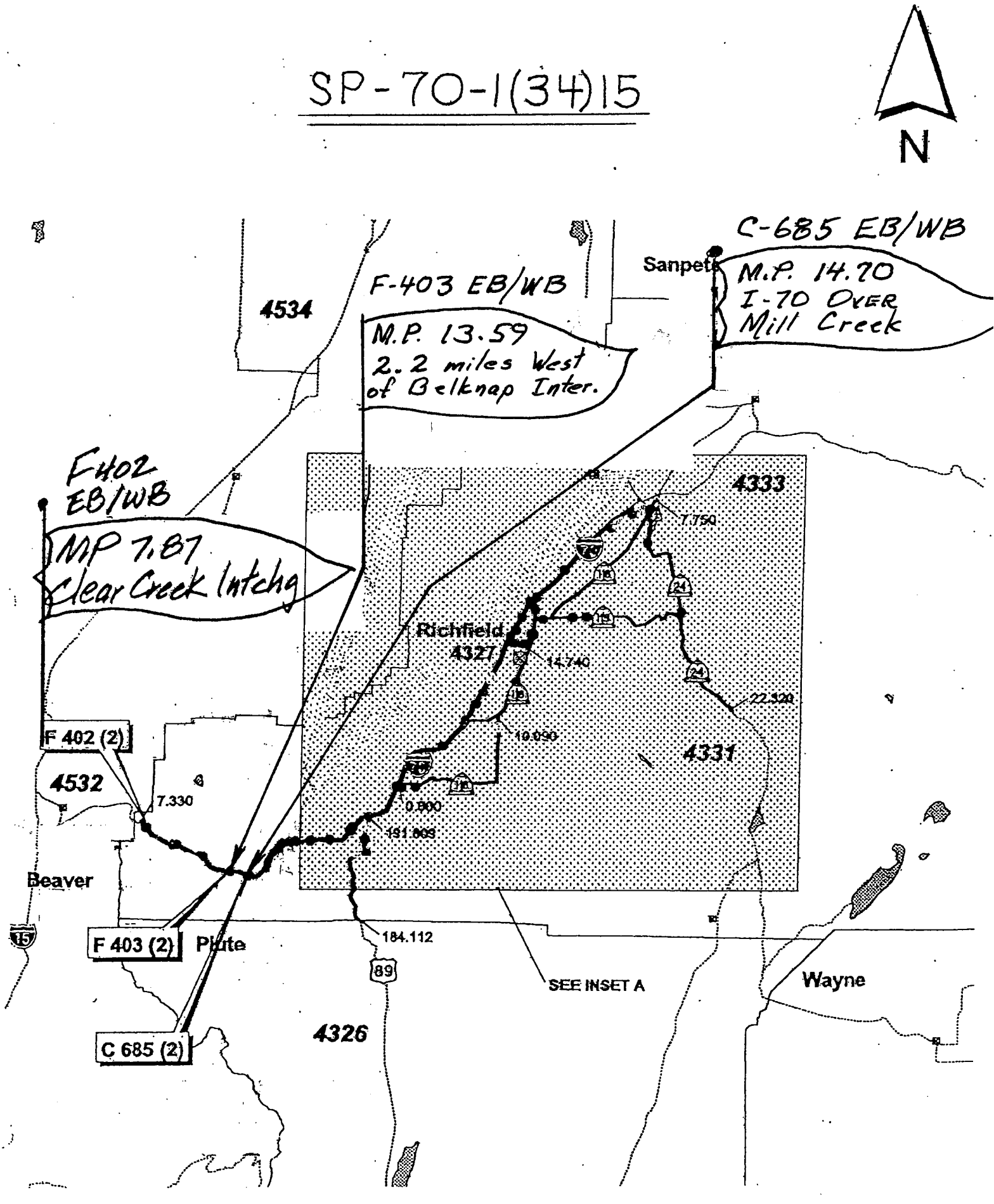
20 - STRUCTURES **Alt Group: 0** **Alt #: 0** **C-685, F-402, F-403**

Item Number	Description	Use Qty	Unit
079220010	**Relief Joint Crack Sealing**	530	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
E.B.	C-685				88.0	44 x 2 = 88 ft.
E.B.	F-402				88.0	44 x 2 = 88 ft.
E.B.	F-403				88.0	44 x 2 = 88 ft.
W.B.	C-685				88.0	44 x 2 = 88 ft.
W.B.	F-402				88.0	44 x 2 = 88 ft.
W.B.	F-403				88.0	44 x 2 = 88 ft.
					528.0	

XI. Location Map

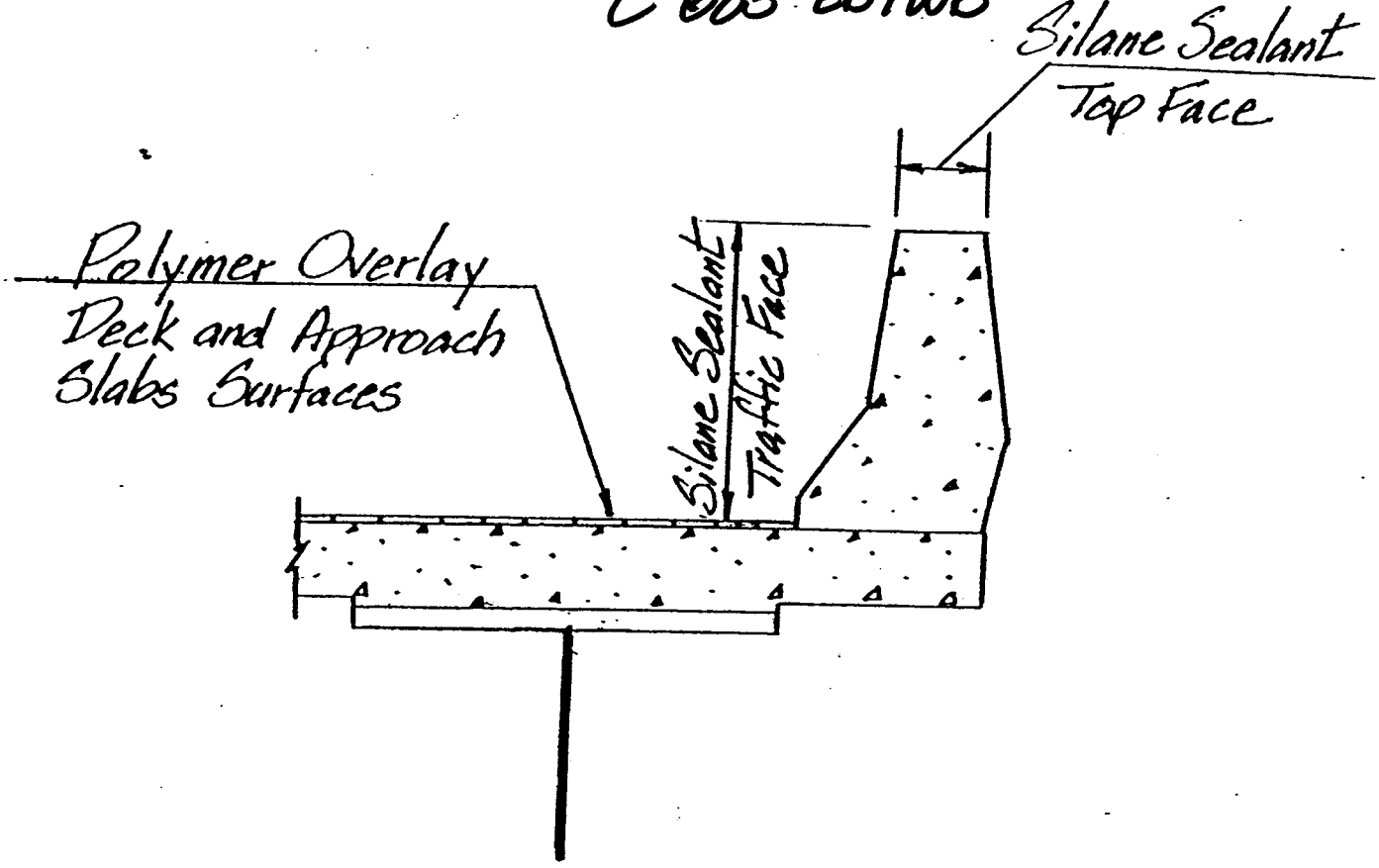
SP-70-1(34)15


N
C-685 EB/WB
M.P. 14.70
I-70 Over
Mill Creek
Sanpete
F-403 EB/WB
M.P. 13.59
2.2 miles West
of Belknap Inter.
4534
F402
EB/WB
MP 7.87
Clear Creek Intchg
4333
7.750
Richfield
4327
14.740
22.320
19.090
4331
F 402 (2)
4532
7.330
0.000
191.803
Beaver
F 403 (2)
Piute
184.112
89
SEE INSET A
Wayne
C 685 (2)
4326

XII. Typical Sections or Detail Sheets

Polymer Overlay & Concrete Sealants

STRUCTURES: F 402 EB/WB
F 403 EB/WB
C 685 EB/WB



Notes:

1. Apply Polymer Overlay to Entire Deck Surface and Approach Slabs Surface.
2. Repair Potholes* in Deck and Approach Slabs Surface with Similar Polymer Material.
3. Apply Concrete Sealant to Traffic and Top Face of Parapets.

* Pothole Patching included in the contract unit price for polymer overlay

TRAFFIC CONTROL PLAN REQUIREMENTS
SP-70-1(34)15

TAPER, BUFFER ZONE & SIGN SPACING CHART

	POSTED SPEED MPH 'S'	MINIMUM TAPER LENGTH 'L' 12' LANE CLOSURE	LENGTH OF BUFFER 'BZ' DESIRABLE	MINIMUM SIGN SPACING 'SS' A	B	C	ONE LANE TWO-WAY FLAGGING TAPER LENGTH
NON INTER STATE	30 AND LOWER	180	100	100	100	100	50
	35	245	120	350	350	350	
	40	320	165				
	45	540	220	500	500	500	100
	50	600	280				
	55	660	335				
	60	720	415				
	65	780	485				
INTER STATE	65	780	485	1000	1500	2640	
	70	840	600				
	75	900	700				

1- TAPER FORMULAS

A) LANE TAPER LENGTH IN FEET

$L = SW \geq$ 45 MPH $L = \frac{WS^2}{60} \leq$ 40 MPH

1/3 L = FOR SHOULDER CLOSURE TAPER

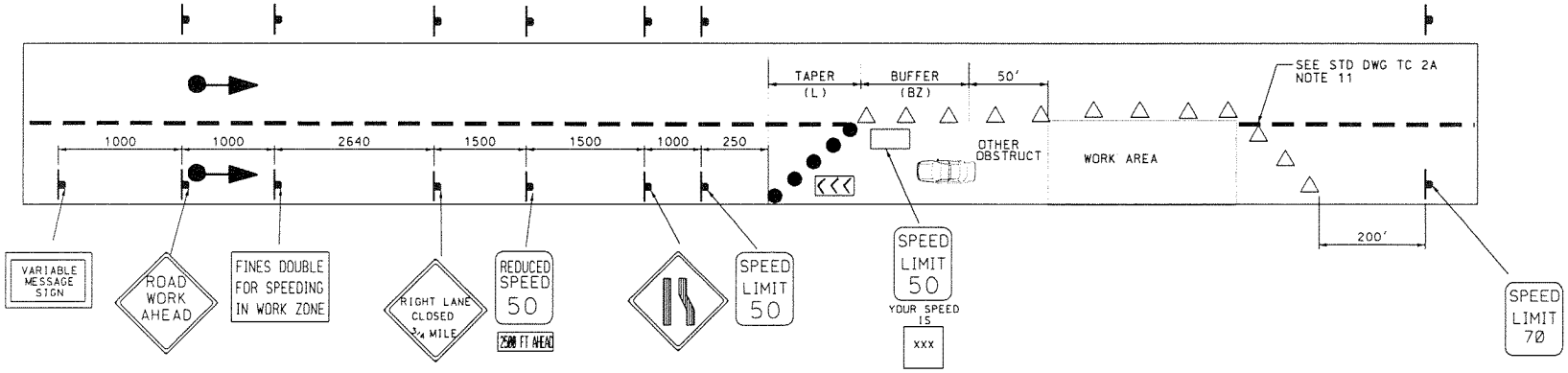
1/2 L = FOR LANE SHIFT TAPER

WHERE L = TAPER LENGTH
W = WIDTH OF CLOSURE OR SHIFT
S = POSTED SPEED

TRAFFIC CONTROL DEVICE LEGEND

- SIGN (PORTABLE OR FIXED)
- CHANNELIZING DEVICE (SEE STD DWG TC 1)
- PLASTIC DRUMS
- FLAGGING STATION
- ADVANCE WARNING ARROW PANEL
- BARRIER
- DIRECTION OF TRAFFIC
- TYPE III BARRICADE
- DIRECTION OF WORK VEHICLE
- OFF-DUTY UHP VEHICLE
- SPEED TRAILER

REDUCED SPEED WORK ZONE SIGNING



NOTES:
1. ALL SIGNS WILL BE FREEWAY STANDARD SIZES INCLUDING SPEED LIMIT SIGN ON TOP OF SPEED TRAILER.
2. SUPPLY ADDITIONAL ORANGE FLAGS FOR ALL SPEED LIMIT SIGNS.
3. USE SPEED REDUCTION ONLY WHEN WORKERS ARE PRESENT IN THE WORK ZONE. ALL OTHER TIMES THE SPEED LIMIT WILL BE 70 MPH.
4. APPROVE MESSAGE FOR VARIABLE MESSAGE SIGN WITH THE RESIDENT ENGINEER.

Parapet Sealing Req'd

438'-1 Out to Out Backwall

See sheet No. 24 for Approach Slab Drain details

Sta. 687+49.17

Sta. 691+87.25

6'-0 12'-0 12'-0 12'-0 6'-0

Sta. 687+51.00
El. 6568.00

Sta. 688+96.00
El. 6563.65

℄ Survey ℄ Profile Line S. 67°06'30" E.

Sta. 690+86.00
El. 6557.95

Sta. 691+86.00
El. 6554.95

West Bound Lanes

℄ Brg. Abutment #1

145'-0

℄ Bent #2

190'-0

℄ Bent #3

100'-0

℄ Brg. ℄ Abutment #4

NOTE
All Abutments and Bents on West Bound Structure are parallel to Bearing N. 22°53'30" E.

Relief Joint Crack Sealing Req'd.

Polymer Overlay Req'd

PTS 691+87.39

Relief Joint Crack Sealing Req'd

East Bound Lanes

PLAN

145'-0 | 190'-0 | 100'-0

℄ Brg. Abutment #1 | ℄ Bent #2 | ℄ Bent #3 | ℄ Brg. ℄ Abut. #4

1:5

2'-0 Min

Natural Ground

Kimberly Road

WEST BOUND ELEVATION

℄ Survey ℄ Profile Line W.B.L.

Variable Median

44'-4 Out to Out
42'-0 Roadway

1:2 | 12'-0 Sh. | 12'-0 Lane | 12'-0 Lane | 6'-0 Sh. | 1:2

7" | -2% | 7"

4 Spaces @ 9'-0 = 36'-0

SECTION A-A

FOR INFORMATION ONLY

Except to Indicate Location of Req'd Work

C685R2

UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

SITUATION & LAYOUT (W.B. STRUCTURE)

690+15.00 W.B.L.

SEVIER

C-685

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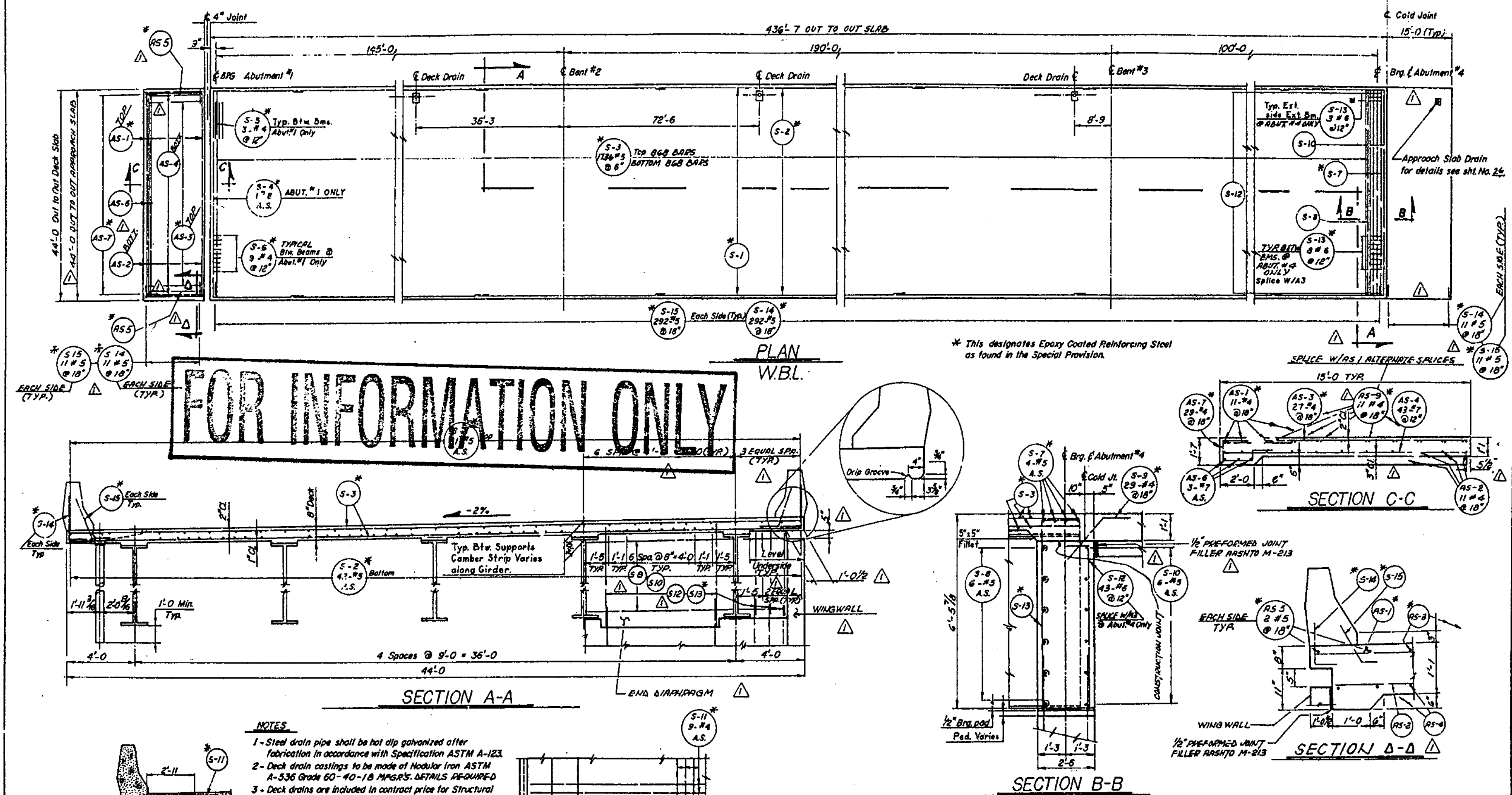
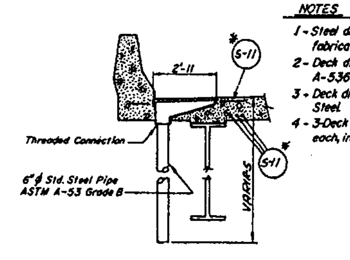
REVISIONS

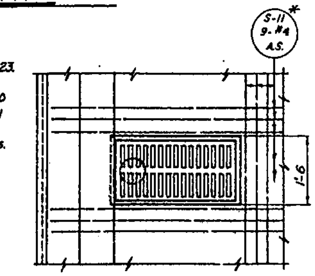




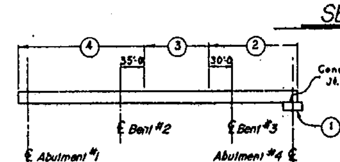
DECK DRAIN ELEVATION

NOTES

1 - Steel drain pipe shall be hot dip galvanized after fabrication in accordance with Specification ASTM A-123.
2 - Deck drain castings to be made of Nodular Iron ASTM A-536 Grade 60-40-18 MFGR'S. DETAILS REQUIRED
3 - Deck drains are included in contract price for Structural Steel.
4 - 3-Deck drains are required. Approximate weight 514 lbs. each, including pipe.



DECK DRAIN PLAN



DECK PLACING SEQUENCE

1.- NUMBER DESIGNATES PLACING SEQUENCE.
2.- ARROW DESIGNATES REQUIRED DIRECTION OF PLACEMENT.

CONCRETE QUANTITIES

LOCATION	CLASS AA(AE) CU. YD.
Deck Slab	490.6
End Diaphragm	21.7
APPROACH SLABS	56.7
TOTAL	569.0

NO.	BY	DATE	REMARKS
Δ	H.E.M.	11/80	ADDED SLOT & OTHER AS NOTED

REVISIONS

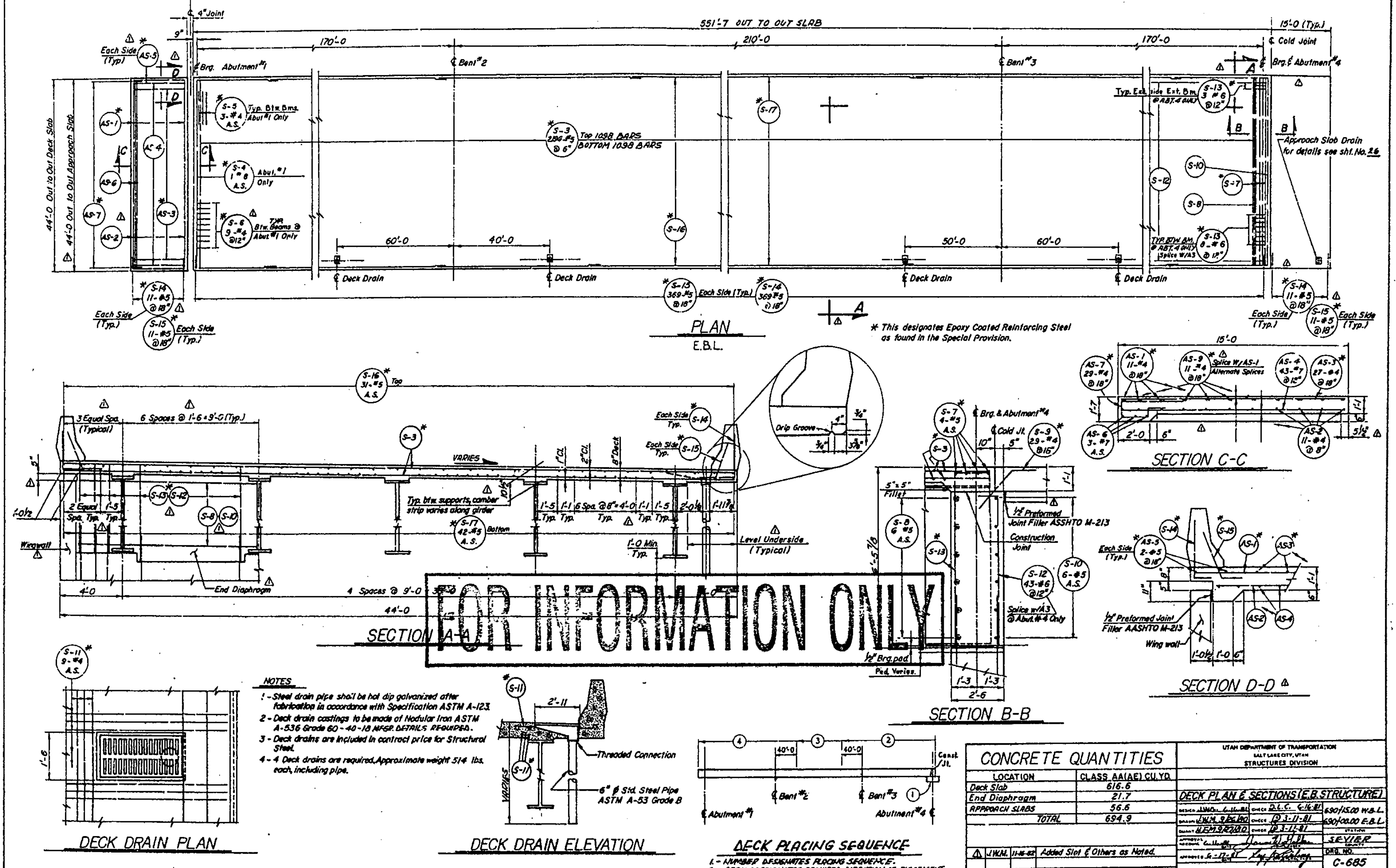
UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

DECK PLAN & SECTIONS (W.B. STRUCTURE)

690+18.00 W.B.L.
690+00.00 E.B.L.
STATION
SEVIER
COUNTY
DRG. NO. C-685

I-70-1(29)11
PROJECT NUMBER

SHT. 22 OF 28



NOTES

1 - Steel drain pipe shall be hot dip galvanized after fabrication in accordance with Specification ASTM A-123.
2 - Deck drain castings to be made of Nodular Iron ASTM A-536 Grade 60-40-18 MFGR. DETAILS REQUIRED.
3 - Deck drains are included in contract price for Structural Steel.
4 - 4 Deck drains are required. Approximate weight 514 lbs. each, including pipe.

CONCRETE QUANTITIES

LOCATION	CLASS AA(AE) CU. YD.
Deck Slab	616.6
End Diaphragm	21.7
APPROACH SLABS	56.6
TOTAL	694.9

NO.	BY	DATE	REMARKS
⚠	J.W.M.	11-16-82	Added Slot & Others as Noted.

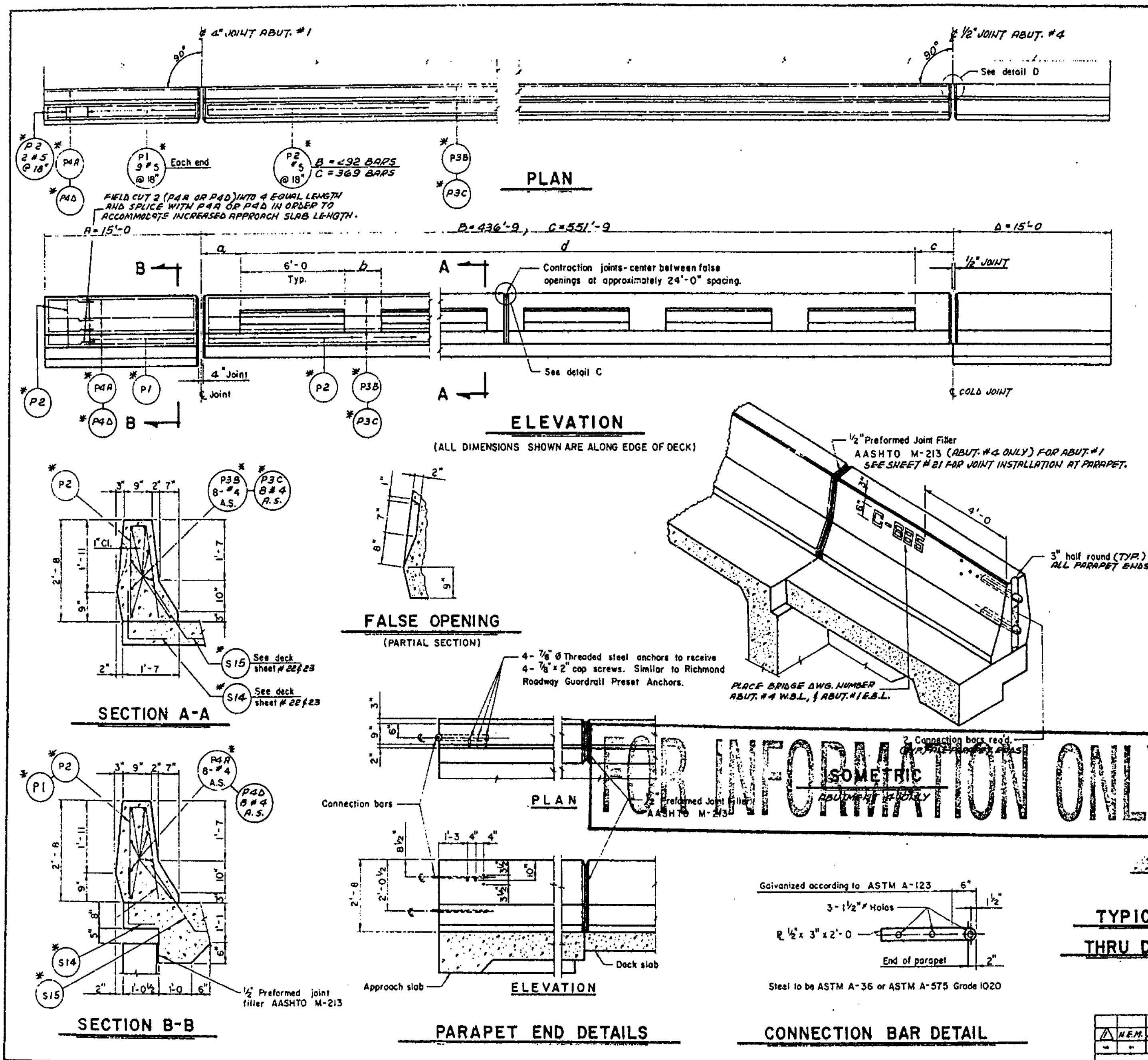
REVISIONS

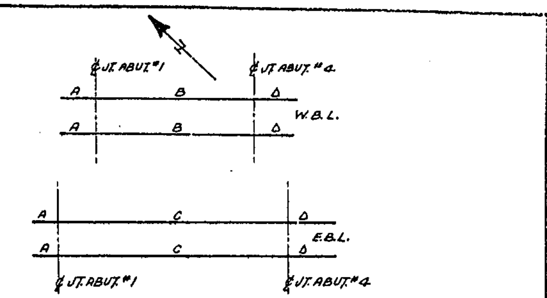
UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

DECK PLAN & SECTIONS (E.B. STRUCTURE)

690+15.00 W.B.L.
690+00.00 E.B.L.

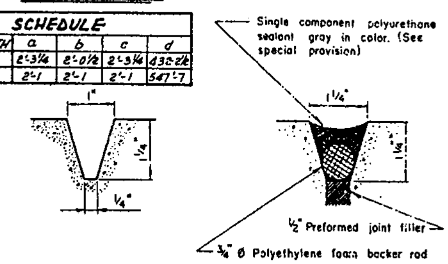
SEVIER
C-685
I-70-1(29)11
SHT. 23 OF 28





KEY PLAN

SCHEDULE				
SPAN & LENGTH	a	b	c	d
B	2'-3 1/4	2'-0 1/2	2'-3 1/4	432'-2 1/2
C	2'-1	2'-1	2'-1	547'-7



DETAIL C

DETAIL D

GENERAL NOTES

1. All longitudinal bars are shown in reinforcing schedule with subscripts which refer to the parapet section where they are located.
2. Cover to reinforcing steel shall be 1 1/2" min. unless noted otherwise.
3. Payment for 7/8" Ø threaded steel anchors, connection bars, preformed joint filler, polyurethane sealant, and polyethylene foam backer rod shall be included in the contract price for Class AA Concrete (AE).
4. Drawing number to be located on right-hand side of approach parapet.
5. Place contraction joint on sides and top of parapet.
6. Sealant and foam backer rod shall extend from deck to top of parapet on the inside parapet face.
7. Reinforcing steel indicated by * shall be epoxy coated.

TYPICAL SECTION
THRU DRWG. NUMBER

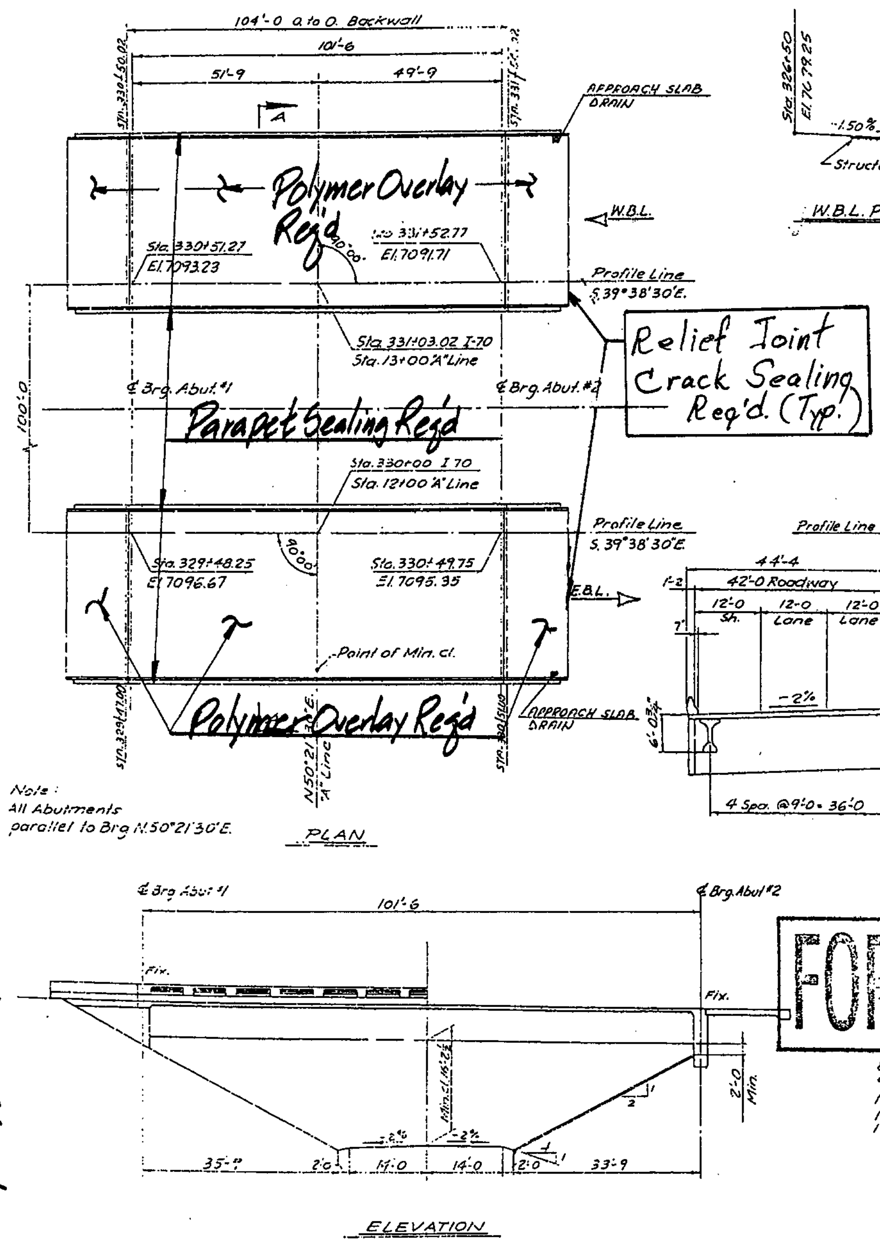
Concrete Quantities for all parapets 229.2 Cu. Yds. Class AA (AE).

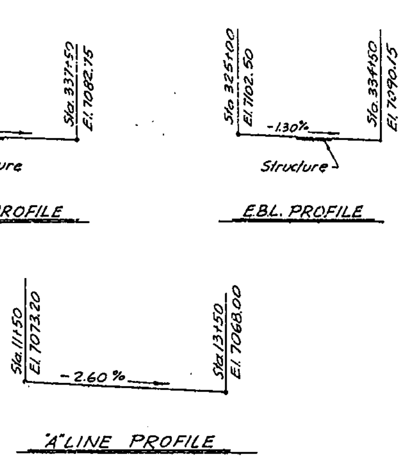
UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

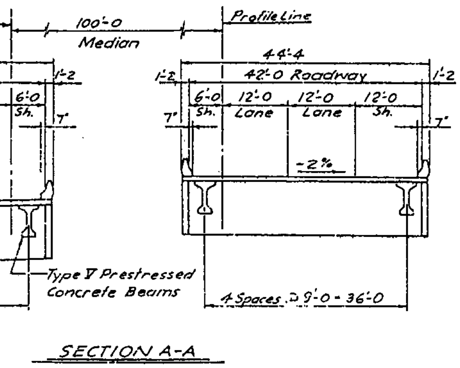
PARAPET DETAILS

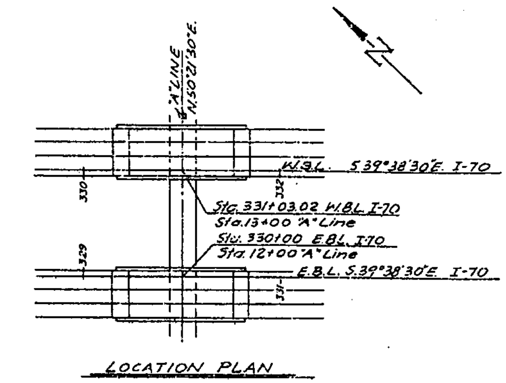
H.E.M. 10/14/82 — 1-28-83
690+15 W.B.L.
690+00 E.B.L.
SEVIER
DRG. NO. C-685
I-70-1(29)11
SHT 25 OF 28

REVISIONS: △ H.E.M. 10/14/82 REPLACED OLD SHEET W/NEW STANDARD









GENERAL NOTES

1. Materials, construction, and workmanship shall be in accordance with the Utah Department of Transportation Standard Specifications for Road and Bridge Construction, Edition of 1979, and Supplements thereto, which are in effect at the date of request for bids.
2. All reinforcing steel shall be deformed billet-steel bars conforming to ASTM designation A615-68, Grade 60.
3. All structural steel shall be structural carbon steel conforming to AASHTO designation M183 except where noted otherwise.
4. Exposed concrete corners shall be chamfered ¾" except where noted otherwise.
5. Cover to reinforcing steel shall be 2" except where noted otherwise.
6. All cast-in place concrete shall be Class AA(AE) except where specified otherwise.

DESIGN DATA

HS20-44 or Interstate Alternate Loading in accordance with AASHTO Specifications of 1977 and Interim Specifications.
Cast-in-place Concrete: f'c = 1400 psi; fs (Reinf.) = 24000 psi, n=8
Prestressed Concrete: f'c = 5,500 psi; fs (Nonprestressed) = 24000 psi; n=6
Structural Steel: fc = 20,000 psi.
Wearing Surface: FUTURE Wearing Surface, 35 lbs/sq ft.
Design Speed: 70 M.P.H.

QUANTITIES

ITEM	ESTIMATED	UNIT	AS CONST.
REINFORCING STEEL (EPOXY COATED)	32,664	LB.	32,664
Reinforcing Steel	48,566	Lb.	48,566
Structural Steel	~~442~~ ①	Lb.	LUMP 1.0
Granular Backfill Borrow	250	Cu. Yds.	237.08
Prestressed Concrete Member (TYPE V 102'-10)	10	Each	10
Class AA Concrete (AE)	~~645~~ ①	Cu. Yds.	LUMP 1.0
Concrete Slope Protection (ELIMINATED WITH S.O. #1)	~~1018~~ ①	Sq. Yds.	0.0

FOR INFORMATION ONLY

Except to Indicate Location of Req'd Work

INDEX OF SHEETS

1. SITUATION & LAYOUT
2. SOIL DATA
3. FOUNDATION PLAN
4. ABUTMENT DETAILS
5. FRAMING PLAN & SCREED ELEVATIONS
6. BEAM DETAILS
7. DECK PLAN & SECTIONS
8. DIAPHRAGM DETAILS
9. PARAPET DETAILS
10. APPROACH SLAB DRAIN DETAILS
11. CONCRETE SLOPE PROTECTION
12. REINFORCING STEEL SCHEDULE

NO.	BY	DATE	REMARKS
①	H.E.M.	6/29/81	FINAL QUANTITIES

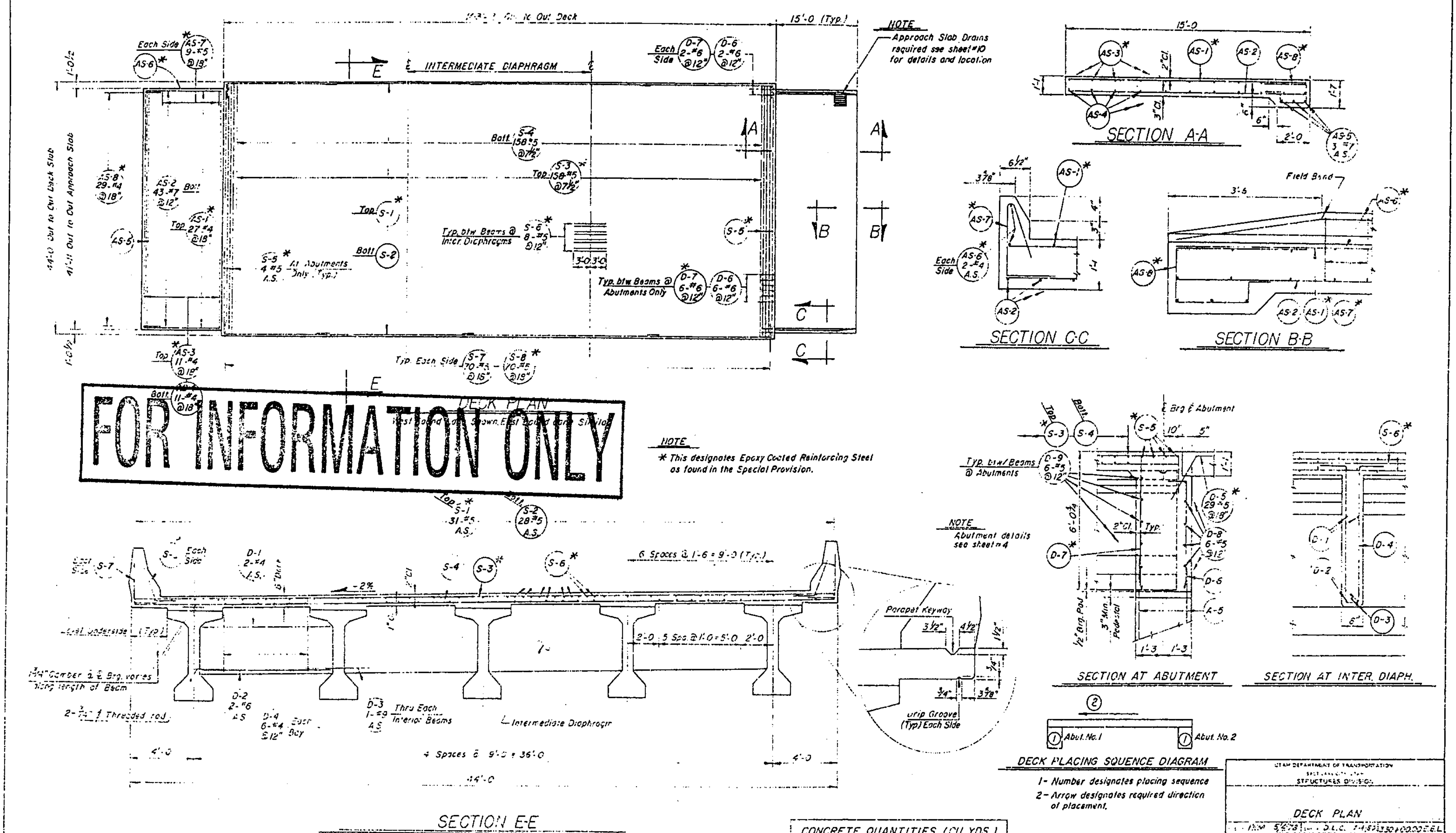
REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

I-70 OVER "A" LINE
SITUATION & LAYOUT

330+00 E.B.L.
331+03.02 W.B.L.
SEVIER
F-402
I-IΔ-70-1(20)17
1 of 12

F 402 R



CONCRETE QUANTITIES (CU. YDS.)		
LOCATION	West Bound	East Bound
Deck Slab & Diaph.	159.0	159.0
Approach Slab	55.2	55.2
TOTAL	214.2	214.2

UTAH DEPARTMENT OF TRANSPORTATION
STRUCTURES DIVISION

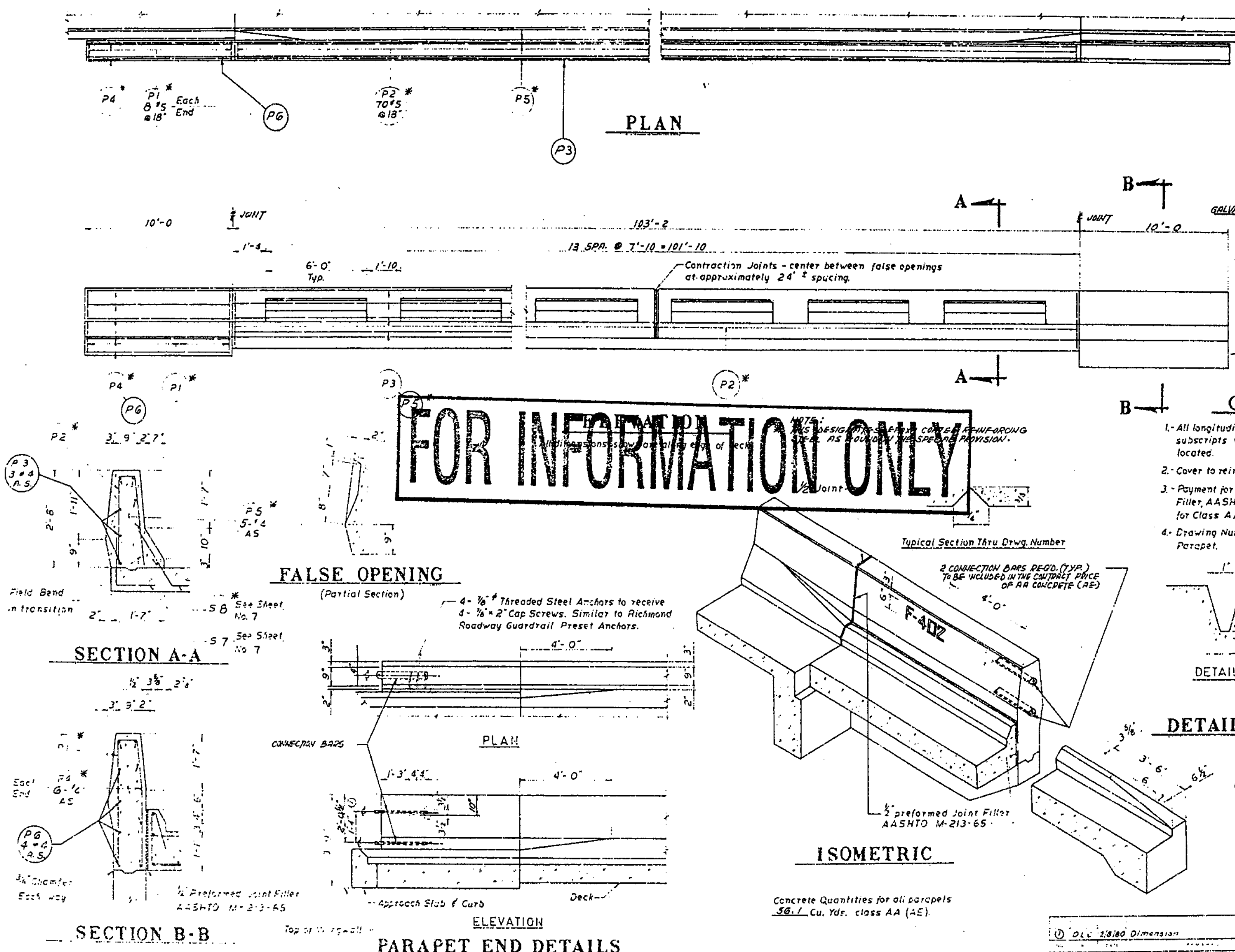
DECK PLAN

SEVIER

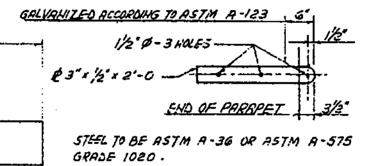
F-402

I-ID-70-1(20)17

7 12



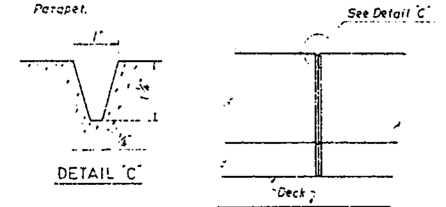
FOR INFORMATION ONLY



CONNECTION BAR DETAIL

GENERAL NOTES

1. All longitudinal bars are shown in reinforcing schedule with subscripts which refer to the parapet section where they are located.
2. Cover to reinforcing steel shall be 1½" min. unless noted otherwise.
3. Payment for 7/8" ϕ Threaded Steel inserts and Preformed Joint Filler, AASHTO M-213-65, shall be included in contract price for Class AA Concrete (AE).
4. Drawing Number to be located on right-hand side of approach Parapet.



DETAIL OF CONTRACTION JOINT ON PARAPET

NOTE: Place Contraction Joint on sides and top of parapet.

UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

PARAPET DETAILS

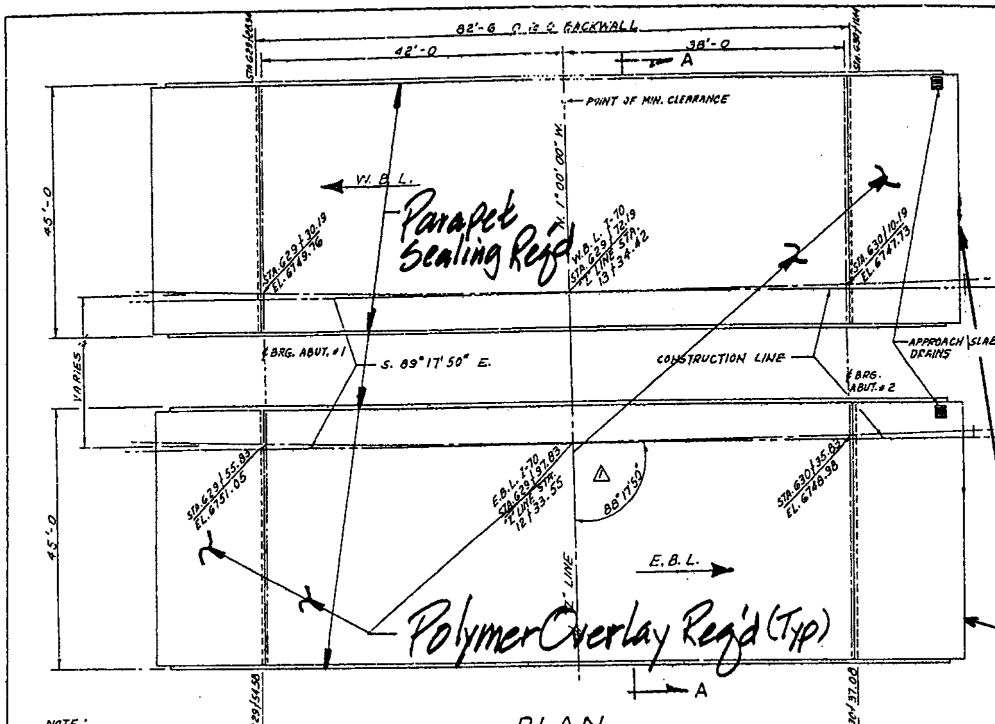
① D.L.C. 2/8/80 Dimension

I-ID-70-1(20)7

SEVIER

F-402

9 12

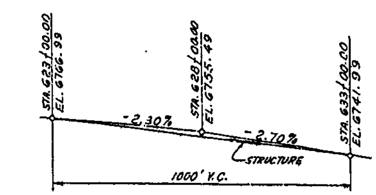


NOTE: ABUTMENTS ARE NORMAL TO BRG. S. 89°17'50" E.

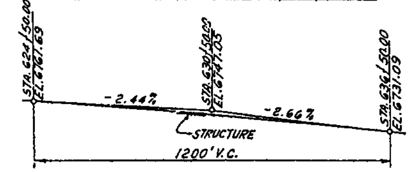
PLAN

W.B.L.	E.B.L.
Δ = 20°08'30" LT.	Δ = 20°08'30" LT.
D = 2°00'	D = 2°00'
R = 2864.79'	R = 2864.79'
T = 709.17'	T = 709.17'
Lc = 607.08'	Lc = 607.08'
Δs = 4°00'	Δs = 4°00'
Ls = 400'	Ls = 400'
P.I. = 626+42.22	P.I. = 626+52.90

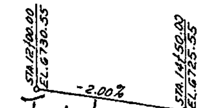
I-70 CURVE DATA



E.B. LANE PROFILE

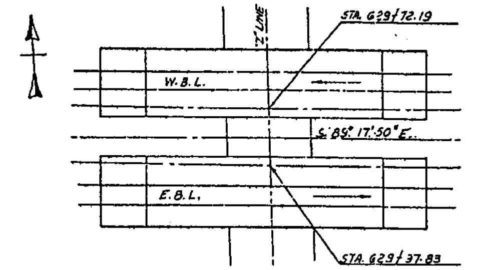


W.B. LANE PROFILE



Relief Joint Crack Sealing Req'd. (Typ.)

"Z" LINE PROFILE



LOCATION PLAN

GENERAL NOTES

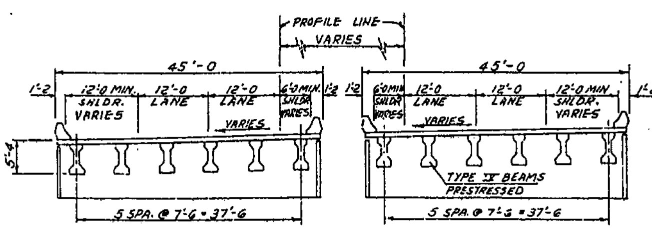
1. MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE UTAH DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, EDITION OF 1979, AND SUPPLEMENTS THERETO WHICH ARE IN EFFECT AT THE DATE OF REQUEST FOR BIDS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BILLET STEEL BARS CONFORMING TO ASTM DESIGNATION A 615-68, GRADE 60.
3. ALL STRUCTURAL STEEL SHALL BE STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M-183 EXCEPT WHERE NOTED OTHERWISE.
4. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4" EXCEPT WHERE NOTED OTHERWISE.
5. COVER TO REINFORCING STEEL SHALL BE 2" EXCEPT WHERE NOTED OTHERWISE.
6. ALL CAST-IN-PLACE CONCRETE SHALL BE CLASS AA(AE) EXCEPT WHERE SPECIFIED OTHERWISE.

DESIGN DATA

HS 20-44 OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH AASHTO SPECIFICATIONS OF 1973 AND INTERIM SPECIFICATIONS.
CAST-IN-PLACE CONCRETE: f'c = 1400 psi, fs(REINF.) = 24000 psi, n = 8
PRESTRESSED CONCRETE: f'c = 5000 psi, fs(NONPRESTRESSED) = 24000 psi, n = 6
STRUCTURAL STEEL: fs = 20,000 psi
WEARING SURFACE: FUTURE WEARING SURFACE, 35 LBS/SQ.FT.
DESIGN SPEED: 70 M.P.H.

QUANTITIES

ITEM	ESTIMATED	UNIT	AS CONSTR.
△ CLASS AA CONCRETE (AE)(S.R.#5)	511 [2]	CU. YDS.	1.0
REINFORCING STEEL	40017	LB.	40,217.0
REINFORCING STEEL (EPOXY COATED)	26380	LB.	26,380.0
STRUCTURAL STEEL	442 [2]	LB.	1.0
GRANULAR BACKFILL BORROW	187	CU. YS.	235.39
PRESTRESSED CONC. MEMBER TYPE III (81'-4)	12	EACH	12.0
PILES (OTHER THAN TIMBER (2'-5 φ)	360	LIN. FT.	361.58



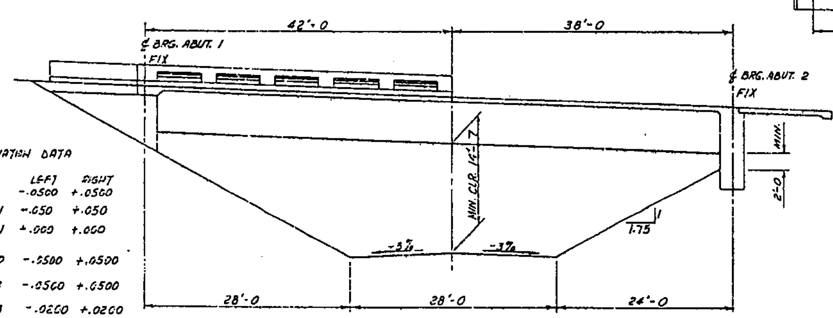
SECTION A-A

INDEX OF SHEETS

1. SITUATION & LAYOUT
2. SOIL DATA
3. FOUNDATION PLAN
4. ABUTMENT DETAILS
5. BEAM DETAILS
6. DECK PLAN & SECTIONS
7. FRAMING PLAN & SCREED ELEVATIONS
8. PARAPET DETAILS
9. APPROACH SLAB DRAIN DETAILS
10. REINFORCING STEEL SCHEDULE

FOR INFORMATION ONLY

Except to Indicate Location of Req'd Work



SUPERELEVATION DATA

	STATION	LEFT	RIGHT
E.B.L.	628+00.00	-.0500	+.0500
	629+50.81	-.050	+.050
	633+50.31	+.000	+.000
W.B.L.	628+00.00	-.0500	+.0500
	629+40.13	-.0500	+.0500
	633+40.13	-.0200	+.0200

ELEVATION

F403R

[2]	H.E.M.	6/30/81	FINAL QUANTITIES
[1]	H.E.M.	5/3/80	MOVED X-ING ANGLE & QUE. T. CHANGE
NO.	BY	DATE	REMARKS

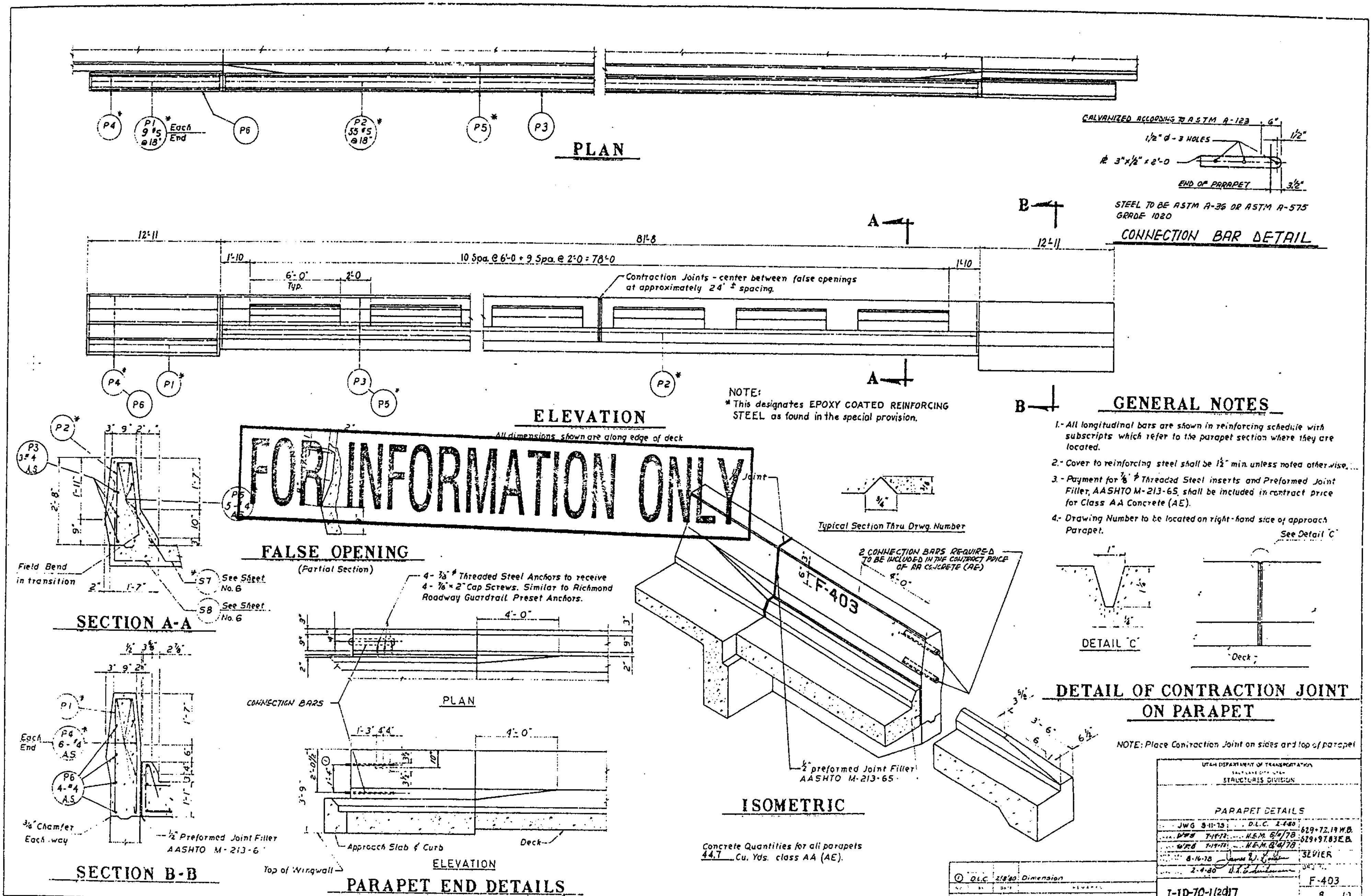
REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
STRUCTURES DIVISION

I-70 OVER "Z" LINE
SITUATION & LAYOUT

589+72.19 W.B.
629+37.83 E.B.
SEVIER
DRG. NO. F-403
I-ID-70-1(20)7
1 of 10

FINALED: BY H.E.M. 6/30/1981



NOTE:
* This designates EPOXY COATED REINFORCING STEEL as found in the special provision.

GENERAL NOTES

1. All longitudinal bars are shown in reinforcing schedule with subscripts which refer to the parapet section where they are located.
2. Cover to reinforcing steel shall be 1½" min. unless noted otherwise.
3. Payment for 7/8" ϕ Threaded Steel inserts and Preformed Joint Filler, AASHTO M-213-65, shall be included in contract price for Class AA Concrete (AE).
4. Drawing Number to be located on right-hand side of approach Parapet.

NOTE: Place Contraction Joint on sides and top of parapet

Concrete Quantities for all parapets 44.7 Cu. Yds. class AA (AE).

XIII. STANDARD DRAWINGS INDEX

(Change Three, Dated 06/02/03)

UTAH DEPARTMENT OF TRANSPORTATION

Y	NUMBER	TITLE	CURRENT DATE
		Advanced Traffic Management System (AT)	
Y	AT 1	Legend Sheet	07/03/02
	AT 2	Ramp Meter Details	07/03/02
	AT 3	Ramp Meter Sign Panel	07/03/02
	AT 4	Typical Ramp Meter Signal Head Mounting	07/03/02
	AT 5	Loop Installation	07/03/02
	AT 6	Conduit Details	07/03/02
	AT 7	Polymer-Concrete Junction Box Details	04/24/03
	AT 8	ATMS Cabinet w/120V Disconnect	07/03/02
	AT 9	ATMS Cab With Stepdown Transformer	07/03/02
	AT 10	Domed CCTV Details	07/03/02
	AT 11	CCTV Pole Detail	07/03/02
	AT 12	CCTV Pole Foundation For Dedicated CCTV Pole	07/03/02
	AT 13	120V VMS Cab Foundation Details	07/03/02
	AT 14	Weigh In Motion Piezo Detail	07/03/02
		Barriers (BA)	
	BA 1A	Precast Concrete Full Barrier Standard Section	12/19/02
	BA 1B	Precast Concrete Full Barrier Standard Section	12/19/02
	BA 2	Precast Concrete Half Barrier Standard Section	07/03/02
	BA 3	Cast In Place Constant Slope Barrier	12/19/02
	BA 4	Beam Guardrail Hardware	07/03/02
	BA 4A	Guardrail Transition	07/03/02
	BA 4B	Beam Guardrail Installation	12/19/02
	BA 4C	Beam Guardrail Anchor Type I	12/19/02
	BA 5	Traffic Control Cable	07/03/02

State-Purple Book With 8 ½” x 11” Plan Sheets

Y	NUMBER	TITLE	CURRENT DATE
		Catch Basins and Cleanouts (CB)	
	CB 1	Standard Catch Basin	07/03/02
	CB 2	Curb Inlet Catch Basin	04/24/02
	CB 3	Standard Transition Concrete Lined Ditch To Pipe Or Diversion Box	07/03/02
	CB 4	Solid Cover For Standard Drawing DB 1 MS-18 Loading	07/03/02
	CB 5	Standard Screw Gate And Frame	07/03/02
	CB 6A	Standard Drop Inlet Details General Notes And Installation Detail	07/03/02
	CB 6B	Standard Catch Basin And Cleanout Box Drop Inlet Type "A" Details	07/03/02
	CB 6C	Standard Catch Basin And Cleanout Box Drop Inlet Type "B" Details	07/03/02
	CB 6D	Standard Catch Basin And Cleanout Box Drop Inlet Type "C" Details	07/03/02
	CB 6E	Standard Catch Basin And Cleanout Box Drop Inlet With Attached Apron Details	07/03/02
	CB 6F	Standard Catch Basin And Cleanout Box Drop Inlet With Attached Apron Details	07/03/02
	CB 6G	Standard Catch Basin And Cleanout Box Drop Inlet Type "D" Details	07/03/02
	CB 6H	Standard Catch Basin And Cleanout Box Drop Inlet Type "D" Tables	07/03/02
	CB 7	Standard Curb And Gutter Drop Inlet	07/03/02
	CB 8A	Double Catch Basin	07/03/02
	CB 8B	Double Catch Basin	07/03/02
	CB 9A	Standard Catch Basin and Cleanout Box Situation & Layout	07/03/02
	CB 9B	Standard Catch Basin and Cleanout Box Section Details	07/03/02
	CB 9C	Standard Catch Basin and Cleanout Box Schedule Of Installation 18" to 42" RCP 12" to 48" CMP	07/03/02
	CB 9D	Standard Catch Basin and Cleanout Box Schedule Of Installation 48" to 66" RCP 60" to 78" CMP	07/03/02
	CB 10A	Standard Catch Basin and Cleanout Box Situation & Layout	07/03/02
	CB 10B	Standard Catch Basin and Cleanout Box Section Details	07/03/02
	CB 10C	Standard Catch Basin and Cleanout Box Schedule Of Installation 42" to 60" RCP 48" to 72" CMP	07/03/02

Y	NUMBER	TITLE	CURRENT DATE
		Crash Cushions (CC)	
	CC 1	Crash Cushion Markings	07/03/02
	CC 2	Crash Cushion Drainage Details Guideline A	07/03/02
	CC 3	Crash Cushion Drainage Details Guideline B	07/03/02
	CC 4	Details For Placement Crash Cushions Type A, B, & D	07/03/02
	CC 5	Grading And Placement Detail Crash Cushion Type C	07/03/02
	CC 6	Crash Cushion Type E Sand Barrel Details	12/19/02
	CC 7	Grading & Installation Details Crash Cushion Type F	04/24/03
	CC 8	Grading & Installation Details Crash Cushion Type G	04/24/03
	CC 9A	Grading & Installation Details Crash Cushion Type H	04/24/03
	CC 9B	Grading & Installation Details Crash Cushion Type H	04/24/03
		Diversion Boxes (DB)	
	DB 1A	Standard Diversion Box/Cover Plate/Grating For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1B	Standard Diversion Box Hinged Lid Details For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1C	Standard Diversion Box Bicycle - Safe Grating Details For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1D	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1E	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1F	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 2A	Standard Diversion Box w/Interchangeable Walls, Bottom Slab, Walls and Apron Detail	07/03/02
	DB 2B	Standard Diversion Box w/Interchangeable Walls, Quantities Schedule	07/03/02
	DB 2C	Standard Diversion Box w/Interchangeable Walls, Hand Slide Gate Details	07/03/02
	DB 2D	Standard Diversion Box Type "G" Hand Slide Details	07/03/02
	DB 2E	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type I Plan	07/03/02
	DB 2F	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type II Plan	07/03/02
	DB 2G	Standard Diversion Box Hinged Lid Solid Cover Type "B" Details	07/03/02

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Y	NUMBER	TITLE	CURRENT DATE
	DB 2H	Standard Diversion Box Hinged Lid Solid Cover Type "B" & "C" Details	07/03/02
	DB 3A	Standard Diversion Box With Manhole Cover Situation And Layout	07/03/02
	DB 3B	Standard Diversion Box With Manhole Cover Up To 42" RCP and Up To 54" CMP	07/03/02
	DB 3C	Standard Diversion Box With Manhole Cover 48" - 72" RCP and 60" to 84" CMP	07/03/02
		Drainage (DG)	
	DG 1	Fill Height for Metal Pipe (Steel)	07/03/02
	DG 2	Fill Height for Metal Pipe (Aluminum)	07/03/02
	DG 3	Maximum Fill Height and End Sections For HDPE and PVC Pipes	12/19/02
	DG 4	Pipe Culverts Minimum Cover	12/19/02
	DG 5	Plastic Pipe, Metal Pipe or Pipe Arch Culvert Bedding	07/03/02
	DG 6	Precast Concrete Pipe Culvert	07/03/02
	DG 7	Gasketted Joints or Coupling Bands for C.M.P.	07/03/02
	DG 8	Metal Culvert End Sections	07/03/02
	DG 9	Miscellaneous Pipe Details	07/03/02
		Environmental Controls (EN)	
	EN 1	Temporary Erosion Control (Check Dams)	07/03/02
	EN 2	Temporary Erosion Control (Silt Fence)	04/24/03
	EN 3	Temporary Erosion Control (Slope Drain and Temporary Berm)	07/03/02
	EN 4	Temporary Erosion Control (Drop Inlet Barriers)	12/19/02
	EN 5	Temporary Erosion Control (Sediment Trap and Curb Inlet Barrier)	07/03/02
		Fence and Gates (FG)	
	FG 1A	Right-of-Way Fence and Gates (Wood Posts)	07/03/02
	FG 1B	Right-of-Way Fence and Gates (Wood Posts)	07/03/02
	FG 2A	Right-of-Way Fence and Gates (Metal Posts)	07/03/02
	FG 2B	Right-of-Way Fence and Gates (Metal Posts)	07/03/02
	FG 3	Swing Gates Type I for Gates Less Than 17'	07/03/02
	FG 4	Deer Gates	07/03/02

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Y	NUMBER	TITLE	CURRENT DATE
	FG 5	Swing Gates Type II for Gates Wider Than 17'	07/03/02
	FG 6	Chain Link Fence	07/03/02
		Grates, Frames, and Trash Racks (GF)	
	GF 1	Manhole Frame And Grated Cover	07/03/02
	GF 2	Manhole Frame And Solid Cover	07/03/02
	GF 3	Rectangle Grate & Frame	07/03/02
	GF 4	Directional Flow Grate & Frame	07/03/02
	GF 5	Solid Cover & Frame	07/03/02
	GF 6	Manhole Steps	07/03/02
	GF 7	Standard Screw Grate & Frame	07/03/02
	GF 8	2' x 2' Grate & Frame	07/03/02
	GF 9	28" x 24" Directional Flow and Frame	07/03/02
	GF 10	Standard Trash Racks 90E X-ing L	07/03/02
	GF 11	Standard Trash Racks	07/03/02
	GF 12	Standard Trash Racks	07/03/02
		General Road Work (GW)	
	GW 1	Raised Median and Plowable End Section	12/19/02
	GW 2	Concrete Curb and Gutter	04/24/03
	GW 3	Concrete Curb and Gutter Details	07/03/02
	GW 4	Concrete Driveways and Sidewalks	07/03/02
	GW 5	Pedestrian Access	02/27/03
	GW 6	Right-of-Way Marker	07/03/02
	GW 7	Newspaper and Mailbox Stop Layout	07/03/02
	GW 8	Newspaper and Mailbox Support Hardware	07/03/02
	GW 9	Delineation Hardware	07/03/02
	GW 10	Delineation Application	07/03/02
		Paving (PV)	
	PV 1	Joints for Highways with Concrete Traffic Lanes and Shoulders	07/03/02
	PV 2	Pavement/Approach Slab Details	12/19/02

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Y	NUMBER	TITLE	CURRENT DATE
	PV 3	Concrete Pavement Details for Urban and Interstate	07/03/02
	PV 4	Concrete Pavement Details for Urban and Interstate	07/03/02
	PV 5	Urban Concrete Pavement Details	07/03/02
	PV 6	Rumble Strips	07/03/02
	PV 7	Rumble Strips - Typical Application	07/03/02
		Signals (SL)	
	SL 1	Traffic Signals Mast Arm Pole and Luminaire Extension	07/03/02
	SL 2	Traffic Signals Mast Arm Detail 25' Thru 65'	07/03/02
	SL 3	Underground Service Pedestal Details	07/03/02
	SL 4	Traffic Signals Mast Arm Pole Foundation	07/03/02
	SL 5	Breakaway Post Mounted Traffic Signal Pole	07/03/02
	SL 6	Power Source Details	07/03/02
	SL 7	Span Wire Signal Pole Detail	07/03/02
	SL 8	Signal Head Details	07/03/02
	SL 9	Pedestrian Signal Assembly	07/03/02
	SL 10	Controller Base Details	07/03/02
	SL 11	Traffic Signals Loop Detector Detail	07/03/02
	SL 12	Junction Box Details	07/03/02
	SL 13	Traffic Counting Loop Detector Detail	12/19/02
	SL 14	Light Pole Breakaway Base	07/03/02
	SL 15	Luminaire Breakaway Base Detail	07/03/02
	SL 16	Single Transformer Substation Details	07/03/02
	SL 17	Light Pole Anchor Base	07/03/02
	SL 18	Light Pole Foundation Extension	07/03/02
		Signs (SN)	
	SN 1	Bridge Load Limit Signs	07/03/02
	SN 2	Flashing School Sign	12/19/02
	SN 3	Overhead School Flasher	07/03/02
	SN 4	Flashing Stop Sign	12/19/02

Y	NUMBER	TITLE	CURRENT DATE
	SN 5	Typical Installation for Milepost Signs	12/19/02
	SN 6	Not Used	
	SN 7	Placement of Ground Mounted Signs	07/03/02
	SN 8	Ground Mounted Timber Sign Post (P1)	12/19/02
	SN 9	Ground Mounted Tubular Steel Sign Post (P2)	07/03/02
	SN 10	Ground Mounted Square Steel Sign Post (P3)	07/03/02
	SN 11	Slipbase Ground Mounted Tubular Steel Sign Post (P4)	07/03/02
	SN 12A	Ground Mounted Sign Installation Details	07/03/02
	SN 12B	Ground Mounted Sign Installation Details	04/24/03
	SN 12C	Ground Mounted Sign Installation Details	07/03/02
		Striping (ST)	
	ST 1	Object Markers "T" Intersection & Pavement Transition Guidance	12/19/02
	ST 2	Freeway Turn Around Markings	07/03/02
Y	ST 3	Typical Pavement Markings	07/03/02
	ST 4	Crosswalks, Parking and Intersection Approaches	07/03/02
	ST 5	Painted Median & Auxiliary Lane Details	07/03/02
	ST 6	Passing/Climbing Lanes Traffic Control	07/03/02
	ST 7	Pavement Markings & Signs at Railroad Crossing	12/19/02
	ST 8	Plowable Pavement Markers	07/03/02
		Structures and Walls (SW)	
	SW 1A	Welded End Guard Unit	07/03/02
	SW 1B	Precast Concrete Cattle Guard	07/03/02
	SW 2	Noise Wall Placement Area	07/03/02
	SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/02
	SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/02
	SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/02
	SW 4B	Precast Concrete Retaining/Noise Wall 2 of 2	07/03/02

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Y	NUMBER	TITLE	CURRENT DATE
		Traffic Control (TC)	
Y	TC 1A	Construction Zone Channelization Devices	07/03/02
Y	TC 1B	Construction Zone Signing	07/03/02
Y	TC 2A	Traffic Control General	07/03/02
	TC 2B	Traffic Control General	07/03/02
	TC 3	Traffic Control Project Limit Signing	07/03/02
	TC 4	Traffic Control Urban Intersections With Roadways Under 50 MPH	07/03/02
	TC 5	Traffic Control Urban Intersections With Roadways Under 50 MPH	07/03/02
	TC 6	Traffic Control Pedestrian Routing	07/03/02
	TC 7	Traffic Control Road Closed, Detour	07/03/02
	TC 8	Traffic Control Lane Closure	07/03/02
	TC 9	Traffic Control Multilane Closure	07/03/02
	TC 10	Traffic Control Expressway And Freeway Crossover/Turn-Around	07/03/02
	TC 11	Traffic Control Exit Ramp Gore	07/03/02
	TC 12	Traffic Control Entrance Ramp Gore	07/03/02
	TC 13	Traffic Control Shoulder-Haul Road	07/03/02
	TC 14	Traffic Control Flagging Operation	07/03/02
	TC 15	Traffic Control 2 Lane/ 2 Way Seal Coat With Cover Material	07/03/02
	TC 16	Traffic Control Pavement Marking	07/03/02

XIV. Special Provisions

May 22, 2003

SPECIAL PROVISION

SP-70-1(34)15

SECTION 00555M

PROSECUTION AND PROGRESS

PART 1 GENERAL

1.1 RELATED SECTIONS

Add the following to 1.12, Limitation of Operations

D. The Contractor shall also inform the traveling public of upcoming work one week prior to the start of construction with Variable Message Signs. The message will be determined by the Resident Engineer.

Scheduling of work shall be approved by the Project Engineer prior to beginning any portion of this project. No work or lane restrictions will be allowed on holidays or the day preceding and following a holiday and any special events as determined by the Engineer.

June 16, 2003

SPECIAL PROVISION

SP-70-1(34)15

SECTION 01554 M

TRAFFIC CONTROL

Add the following to Article 1.6, "Traffic Control Plan Requirements":

J. Include the following in the Traffic Control Plan:

1. Place portable variable message signs prior to each work site location, eastbound or westbound or both when construction is taking place both directions.
2. Place advance speed limit warning signing with auxiliary distance plates when speed limit is reduced.
3. Speed limit may be reduced to 50 mph. 50 mph speed limit only allowed when workers are present and signing will be removed or covered at all other times.
4. Plan will include use of an off-duty Utah Highway Patrol State Trooper provided by the Department.
5. Provide and maintain continuous operations of a trailer-mounted solar-powered weatherproof speed measurement and display system for each lane closure on the project at all times when lane closures are in effect.
   a. Equipment speed measurement and display system(s) with the following:
      - LED display consisting of two characters 18 inches high.
      - LED's legible in direct sunlight from a distance of 1000 feet.
      - Display capable of displaying speeds up to 99 mph.
      - Sign, legend: "Your Speed", with minimum 6 inch high letters.
      - Mount a regulatory Speed Limit Sign, complying with Standard Drawing TC1B, to top of trailer.

June 23, 2003

SPECIAL PROVISION

SP-70-1(34)15

SECTION 02765S

PAVEMENT MARKING PAINT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish Acrylic Water Based pavement marking paint meeting Federal Specification TTP-1952 D and refer to 2.2 for resin requirement.

B. Apply to hot mix asphalt or Portland cement as edge lines, center lines, broken lines, guide lines, contrast lines, symbols and other related markings.

C. Remove pavement markings.

1.2 REFERENCES

A. AASHTO M 247: Glass Beads Used in Traffic Paint.

B. ASTM D 562: Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using the Stormer-Type Viscometer.

C. ASTM E 1347: Color and Color-Difference Measurement by Tristimulus Colorimetry.

D. ASTM D 2205: Selection of Tests for Traffic Paints.

E. ASTM D 2743: Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography.

F. ASTM D 2805: Hiding Power of Paints by Reflectometry.

G. ASTM D 3723: Pigment Content of Water-Emulsion Paints.

H. ASTM D 3960: Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

I. ASTM D 4451: Pigment Content of Paints.

J. ASTM D 5381: X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders.

K. Federal Standards 595B, 37875, 33538, 11105 and TTP-1952 D.

1.3 ACCEPTANCE

A. Provide fixtures (ball valves, gate valves or other) on paint truck for the purposes of obtaining field samples.

B. Agitate the paint to allow for thorough mixing. Follow paint manufacturer=s recommendation for agitation and mixing times.

C. Stop all agitation before sample is drawn.

D. All meters on the paint truck must be calibrated annually and certified for application rate verification. Calibration tolerances for meters must be +/- 0.5 pounds per gallon. Keep a clean, legible copy of calibration report with the paint truck. Certifications performed by company personnel, meter calibration companies or UDOT Equipment Certification Unit.

E. UDOT ENGINEER:
1. Visually inspects each line to verify bead adhesion and compliance with specified line dimensions requirements.
2. Verifies that the paint and beads are being applied within specified tolerances a minimum of once each production day.
3. Verifies quantities used by either method:
    a. Measuring both paint and bead tanks prior to and after application.
    b. Witnessing the meter readings prior to and after application.
4. Randomly sample each color of pavement marking paint used, minimum of one sample each per project.
    a. Use a clean one pint metal paint can.
    b. Sample paint immediately after the paint has been completely agitated. (Stop all agitation before drawing the sample)
    c. Allow a minimum of 10 gallons to be applied prior to taking sample.
    d. Fill the sample container to within 2 inch of full.
    e. Seal the containers immediately by tightly attaching the container=s lid.
    f. Submit paint samples to Central Chemistry Lab for acceptance.

g. For each sample include:
- Project Number
- Project Name
- Paint Manufacturer
- Batch Number
- Striping Company
- Color of Paint
- Est. Quantity
- Date Sampled
- Sampler=s name

F. Repaint any line or symbol failing to meet bead adherence and dimensional requirements.

G. Price Reductions for Pavement Markings installed below the specified wet mil thickness are outlined in Table I.

H. Contractor will repaint pavement markings that fail to meet the quantitative requirements of Article 2.2 Paint, at no cost to the Department.

Table I - Price Reduction for Wet Mil Thickness	
	Pay Factor
At the specified mil thickness	1.00
1-10 percent below the Specified wet mil thickness	0.75
11-15 percent below the Specified wet mil thickness	0.50
More than15 percent below the Specified wet mil thickness	Repaint Pavement Markings

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Select an acrylic water based pavement marking paint manufacturer from the Accepted Products Listing (APL) maintained by the UDOT Research Division.

2.2 PAINT

A. Follow Federal Standards 595B, 37875, 33538, and 11105. Meet the following quantitative requirements for Acrylic Water Based Paint listed in Table II:

Table II - Quantitative Requirements

Property	White	Yellow (lead free)	Black	Test
Pigment: Percent by weight	62.0 +/- 2	62.0 +/- 2	62.0 +/- 2	ASTM D 3723
Total Solids: Percent by weight, minimum	77.0	77.0	77.0	ASTM D 2205
Nonvolatile vehicle: Percent by weight vehicle, minimum*	40.0	40.0	40.0	ASTM D 2205
Viscosity, KU @ 77 degrees F	80 - 95	80 - 95	80 - 95	ASTM D 562
Volatile Organic Content(VOC): lbs/gal, maximum	1.25	1.25	1.25	ASTM D 3960
Directional Reflectance: Minimum	92.0	50.0	N/A	ASTM E 1347
Dry Opacity: Minimum (5 mils wet)	0.95	0.95	N/A	ASTM D 2805

* The binder shall be 100 percent acrylic, a minimum of 40 percent, by weight, as determined by infrared analysis and other chemical analysis available to UDOT (ASTM D 2205). Consisting of either Rohm and Haas Fastrack HD- 21A or Dow DT-400NA.

B. Additional requirements:
1. Free of lead, chromium, or other related heavy metals ASTM D 5381.
2. ASTM D 2743, ASTM D 4451 and ASTM D 5381: Tests used to verify paint samples meet “Accepted Products Listing.”

2.3 GLASS SPHERE (BEADS) USED IN PAVEMENT MARKING PAINT

A. Specific Properties: Meet AASHTO M 247.
   1. Gradation:

Passing a No. 14 sieve, percent	95 - 100
Passing a No. 16 sieve, percent	80 - 95
Passing a No. 18 sieve, percent	10 - 40
Passing a No. 20 sieve, percent	0 - 5
Passing a No. 25 sieve, percent	0 - 2

   2. Beads having a Silane adhesion coating.
   3. Roundness - The glass beads will have a minimum of 80 percent true spheres.

B. Beads used in Temporary Pavement Markings meet AASHTO M247 Type II uniform gradation.

PART 3 EXECUTION

3.1 PREPARATION

A. Line Control.
   1. Establish control points at 100 ft intervals on tangent and at 50 ft intervals on curves.
   2. Maintain the line within 2 inches of the established control points and mark the roadway between control points as needed.
      a. Remove paint that is not placed within tolerance of the established control points and replace at no expense to the Department. Refer to article 3.4.
      b. Maintain the line dimension within 10 percent of the width and length dimensions defined in Standard Drawings ST1 - ST8.

B. Remove dirt, loose aggregate and other foreign material and follow manufacturer=s recommendations for surface preparation.

3.2 APPLICATION

A. Apply Pavement marking paint at the following Wet mil thickness requirements.
1. 20 – 25 wet mils for all markings.

Example Calculation: (Verify wet mil thickness)

$$\text{Wet Mils} = \frac{(0.133681\ ft^3/gal)}{(X\ ft/gal)(Z\ ft)} * 12000\ mil/ft$$

Where,
X = application rate. (Meter readings or dipping tanks).
Z = line width measured in feet.
12000 = conversion from ft to mil
0.133681 = conversion from gallons to cubic feet.

For information only: Approximate application rate for required mil thickness requirements.
1. 4 inch Solid Line: From 190 to 240 ft/gal
2. 4 inch Broken Line: From 760 to 960 ft/gal
3. 8 inch Solid Line: From 95 to 120 ft/gal

B. Refer to Table I for pavement markings that are less than 20 wet mils in thickness.

C. No additional payment for pavement markings placed in excess of 25 wet mils in thickness or exceeding dimensional requirements outlined in Article 3.1 paragraph A.

D. Painted Legends and Symbols 1 gallon per 80 square feet. Provide Engineer calculations of legends and symbols for pay determination.

E. Glass Sphere (Beads): Apply a minimum of 8 lbs/gal of paint, the full length and width of line and pavement markings.
1. Do not apply glass beads to contrast lines (black paint).

F. Begin striping operations no later than 24 hours after ordered by the Engineer.

G. At time of application apply lines and pavement markings only when the air and pavement temperature are:
1. 50 degrees F and rising for Acrylic Water Based Paint.

H. Comply with Traffic Control Drawing TC-16

3.3 CONTRACTOR QUALITY CONTROL

A. Application Rate: Verify that the paint and beads are being applied within specified tolerances prior to striping.

B. Curing: Protect the markings until dry or cured. In the event that the uncured marking is damaged the marking will be reapplied and track marks left on the pavement will be removed at no additional cost to the Department.

3.4 REMOVE PAVEMENT MARKINGS

A. Use one of these removal methods:
   1. Grinding
   2. High pressure water spray
   3. Sand blasting
   4. Shot blasting.

B. Do not eliminate or obscure existing striping, in lieu of removal, by covering with black paint or any other covering material.

C. Use equipment specifically designed for removal of pavement marking material.

END OF SECTION

May 22, 2003

SPECIAL PROVISION

SP-70-1(34)15

SECTION 03371S

EPOXY-URETHANE POLYMER CRACK TREATMENT AND WATERPROOFING OVERLAYS FOR BRIDGE DECKS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures for applying a protective crack treatment and bridge deck overlay using epoxy-urethane polymers and a broadcast aggregate wearing surface.

1.2 REFERENCES

A. ASTM C-638: Tensile Stress and Load Bearing Capacity

B. ASTM C-566: Aggregate Testing

C. Mohs Scale Hardness Test

D. Sieve Analysis: Aggregate Gradation

E. ASTM C-109: Compressive Strength of Hydraulic Cement Mortars

F. ASTM C0778: Sampling

G. ASTM D-570: Water Absorption of Plastics

H. ASTM D-2240: Rubber Property – Durometer Hardness

I. ASTM C-501: Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abrader

J. ACI – 503R: Adhesion to Concrete, Pull Out Test

K. California Test Method 419: Flexural Creep

L. ASTM D-790: Flexural Yield Strength

M. ASTM D-971: Surface Tension

N. NCHRP 244: Chloride Penetration Test Method

O. ASTM 4065-95: Dynamic Mechanical Analysis

1.3 SUBMITTALS

A. Submit, the name of the manufacturer of the Polymer Overlay materials at the Pre-Construction Meeting.

B. Submit at the Preconstruction Meeting, a Certificate of Compliance from an independent nationally recognized laboratory stating that the polymer overlay materials meet the requirements listed in Tables 1, 2, 3, 4, 5 and other material requirements contained in this specification.

C. Submit a name and phone number of the Manufacturer's Technical Support Representative at the Preconstruction Meeting.

PART 2 PRODUCTS

2.1 EPOXY-URETHANE BRIDGE DECK OVERLAY SYSTEM

A. Install an **epoxy-urethane bridge deck overlay system** consisting of surface preparation, application of a pretreatment for crack filling and bonding, and two (2) coats of an epoxy-urethane polymer resin broadcast with a high wear, high skid aggregate that chemically cures to provide an impervious wearing surface.

2.2 STEEL SHOT BLAST

A. Clean concrete surfaces using a Steel Shot Blast in accordance with the recommendations of the polymer overlay manufacturer.

2.3 PRETREATMENT AND CRACK FILLER

A. After cleaning the concrete surface, apply a two (2) component pretreatment to the bridge deck to fill minor cracks and increase the bond strength between the overlay and the deck surface. Pretreatment to comply with the physical properties of TABLE 1:

TABLE 1 PHYSICAL PROPERTIES OF THE PRETREATMENT SYSTEM	
Property	Value
Compressive Strength, min. psi	5,500 – 6,000
Tensile Strength, min. psi	3,100 – 3,400
Tensile Elongation, percent min.	35 ±5
Water Absorption, percent by wt. Max.	<0.10
Shore D Hardness, 77°F min.	70 ±5
Gel Time, minutes	48-52 (7 oz.)
Adhesion to Concrete	100% failure in concrete
Surface tension	*Less than 0.0012 pounds/in^3*
Percent Solids	100

2.4 EPOXY-URETHANE POLYMER OVERLAY

A. After applying the pretreatment, apply two (2) layers of a two-part epoxy-urethane co-polymer resin and saturate it with a broadcast aggregate before it cures. The polymer overlay is to be free of any fillers and volatile solvents. The use of external/conventional flexiblizers is not permitted. They polymer is to be formulated to volumetric mixing proportions (such as 1 part A to 1 part B), according to the manufacturer's recommendations. The cured polymer system is to comply with the physical requirements of TABLE 2.

TABLE 2 PHYSICAL PROPERTIES OF THE EPOXY-URETHANE OVERLAY SYSTEM	
Property	Value
Compressive Strength, min. psi	7,000
Tensile Strength, min. psi	2,500
Tensile Elongation, percent min.	35 ±5
Water Absorption, percent by wt. Max.	0.20
Shore D Hardness, 77°F min.	65 ±5
Gel Time, minutes	22-31
Abrasion Resistance, oz., max.	0.003
Adhesion to Concrete	100% failure in concrete
Flexural Creep: Total Movement in 7 days	*.0065 in*
Flexural Yield Strength, min. psi	5,000
Percent Solids	100

B. The modulus of the cured epoxy-urethane system is to comply with the requirements of TABLE 3, using a variable temperature Dynamic Mechanical Analysis (DMA) at a frequency of 1 HZ with a 0.3% strain using ASTM D-4065-95.

C. The cured epoxy-urethane system is to conform to a load bearing capacity retaining 85% of its original load bearing strength at (tensile strength) as 20% strain using ASTM method D-638.

TABLE 3
VISCO-ELASTIC PROPERTIES OF THE EPOXY-URETHANE SYSTEM

TEMPERATURE	STORAGE MODULUS pounds/in^2	LOSS MODULUS Pounds/in^2
14°F	$1.45X10^5$	$8.70X10^3$
68°F	$1.01X10^5$	$1.30X10^4$
122°F	$5.80X10^3$	$4.35X10^3$
140°F	$1.45X10^3$	$1.01X10^3$
158°F	$8.70X10^2$	$2.90X10^2$

2.5 AGGREGATE

A. An aggregate wearing surface is to be broadcast into the epoxy-urethane system according to the manufacturer's specifications. The aggregate used is to be non-friable, non-polishing, and clean and free of surface moisture. It should have a proven record of durability in this type of application. 100% of the aggregate is to have at least 1 mechanically fractured face for materials being retained on the #10 sieve. The aggregate is to be thoroughly washed and kiln dried to a maximum moisture content of 0.2% by weight (ASTM C-566). The recommended aggregate is Washington Stone. Alternate aggregates may be allowed upon approval by the manufacturer and ENGINEER.

B. The aggregate is to meet the physical properties of TABLE 4 and TABLE 5:

TABLE 4 AGGREGATE PROPERTIES	
GLACIAL GRAVEL	BASALT QUARTZITE GRANITE (% by Weight)
$Si0_2$	75.03
Al_2O_3	11.49
Fe_2O_3	3.57
CaO	2.84
MgO	1.59
SO_3	0.08
Na_2O	2.58
K_2O	0.99
Combined Alkali	3.20
Ignition Loss	1.72
Mohs Scale Hardness	6.50
ASTM 566 (water absorption)	0.2%

TABLE 5 AGGREGATE GRADATION	
Sieve Size (#4 x #10)	Percent Passing
0.187 in	100
0.078 in	10 – 35
0.033 in	0 – 10

PART 3 EXECUTION

3.1 SURFACE PREPARATION

A. Pot-Hole Patching: Repair any minor potholes of the surface area of the deck with a similar epoxy-urethane material in accordance with the recommendations of the manufacturer and the ENGINEER. Any costs associated with the pothole repairs are included in the Bid Item for the Polymer Overlay System.

B. Shot-Blasting: The entire deck is to be cleaned by steel shot-blasting to remove any oil, dirt, rubber or other materials that, in the opinion of the manufacturer or ENGINEER, may be detrimental to the bonding and curing of the polymer overlay.

C. Curbs: In areas that cannot be reached with the steel shot-blasting, such as curbs, sandblasting equipment or mechanical grinders are permitted with the approval of the manufacturer or ENGINEER.

D. Traffic: Traffic is not to be allowed on any portion of the deck which has been shot-blasted. The overlay equipment will be allowed on cleaned surfaces under the supervision of the manufacturer.

E. Weather: All surfaces to be treated are to be dry at the time of application. The polymer overlay system is not to be applied when it has rained within 24 hours or is expected to rain within 8 hours. Moisture content in the concrete substrate is not be exceed 4.5% when measured by an electronic meter. The minimum recommended temperature is 50°F and increasing. The polymer overlays are not to be applied before April 15th or after September 30th.

3.2 APPLICATION

A. Sound Surface: The application of the pretreatment and Epoxy-Urethane Overlay Systems are to be on a structurally sound concrete surface and in accordance with the manufacturer's specifications.

B. Metered Mixing Equipment: The overlay shall be applied on all deck areas using metering, mixing and distribution machinery *owned and operated* by the manufacturer. The application machine shall feature positive displacement volumetric metering pumps controlled by a hydraulic power unit. Components shall be stored in temperature controlled reservoirs capable of maintaining 100° (±10°)F to insure optimum mixing. Ratio check verification at the pump outlets as well as cycle counting capabilities to monitor output will be standard features. Line mixing shall be motionless so as to not overly shear the material or entrap air in the mix. The machine shall maximize working time of the material by mixing it immediately prior to dispensing.

C. Layer Thickness: The number of layers and the application rates of the liquid in the various layers shall be as recommended by the manufacturer in order to achieve a minimum overlay thickness of 0.375 in.

D. First Layer: Application of the Liquid: After manually or mechanically measuring and mixing of the components, the liquid shall be evenly distributed on the clean, dry deck surface at the rate as recommended by the manufacturer. After the entire deck surface is wet, allow 1-2 hours for the liquid to achieve full depth penetration into cracks as well as adequately encapsulate the steel grid, if any. After the liquid is allowed to penetrate, medium size coarse silica sand may be broadcast evenly if the subsequent application is going to be applied after 8-12 hours.

E. Second Layer: Prior to the application, if there exists any excess or loose aggregate from the previous coat, such excess aggregate shall be completely removed by vacuum or with compressed air. After mixing of the components via the mechanical application equipment, the liquid shall be evenly distributed on the clean, dry deck surface at the rate as recommended by the manufacturer.

F. Time Limits For Aggregate: After the application of the liquid in the first and second coats, the maximum time allowed before broadcasting of the aggregate is as follows:

Above 90°F	10 minutes
80°F to 90°F	15 minutes
70°F to 80°F	20 minutes
60°F to 70°F	25 minutes
50°F to 60°F	35 minutes

G. Broadcasting Aggregate: Broadcasting on decks shall be by truck-mounted equipment capable of dispensing the aggregate onto the deck in a uniform manner as directed or otherwise approved by the manufacturer. The aggregate shall be broadcast such that to cover the surface so that no wet spots appear and before the co-polymer begins to gel. The aggregate must be dropped vertically in such a manner that the level of the liquid is not disturbed. In the first and second layers of the liquid, aggregate conforming to TABLES 4 and 5 of this specification shall be broadcast to saturate until no wet spots remain.

H. Removal Of Excess Aggregate: After the overlay has hardened, removal of all loose and excess aggregate with a power vacuum or other method shall be made prior to the application of subsequent coats.

I. Longitudinal Joints In The Overlay: (i.e., between two adjacent lanes) shall be staggered and overlapped between successive coats so that no ridges will appear.

J. Traffic: Traffic may be allowed on the final layer, on in between layers after the resin has cured (as determined by the manufacturer) and after removal of all excess, loose aggregate.

K. Storage And Handling, Liquid Material: All material shall be transported and stored in their original containers inside a dry, temperature controlled facility and maintained at a minimum temperature of 60°F to 90°F.

L. Job Site Storage: The materials shall be stored on the job site in a dry, weather protected facility away from moisture and within the temperature range of 60°F to 90°F. When the materials are transported or stored on the job or in the application machine tanks, the material must also be maintained at a temperature of 60°F to 90°F.

M. Handling of Liquid Materials On The Job: Protective gloves, clothing, boots and goggles shall be provided to workers and inspectors directly exposed to the material. Product safety data sheets shall be provided to all workers and inspectors as obtained from the manufacturer.

N. Aggregat**e**: All aggregate shall be stored in a dry, moisture-free atmosphere. The aggregate shall be full protected from any contaminants on the job site and shall be stored so as not be exposed to rain or other moisture sources.

3.3 QUALITY CONTROL

A. Technical Support Representative: The manufacturer shall have a representative on the job site at all times who, upon consultation with the ENGINEER, may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer's representative and the ENGINEER are satisfied that appropriate remedial action has been taken by the CONTRACTOR.

B. Warranty: The epoxy-urethane co-polymer manufacturer and the CONTRACTOR shall jointly guarantee the wearing surface against all defects incurred during normal traffic for a **period of three (3) years**, for any delamination or reduced skid (less than 50). The guarantee period shall commence on the date of acceptance of work (typically the date traffic is allowed on surface),

C. Samples: The manufacturer shall furnish at least one-liter sample of each component from each lot to the DOT laboratory to verify material supplied.

D. Prior Performance: The selected material must have a satisfactory performance in Utah for at least 2-years from the time of placement.

E. Packing Requirement: All materials must be packed in strong, substantial containers. The containers shall be identified as Part A and Part B and shall be plainly marked with the name and address of the manufacturer, name of the product, mixing proportions and instructions, lot and batch numbers, date of manufacture and quantity contained therein.

F. Material Quality Control And Testing Methods: The materials used shall meet the properties specified in the tables and other sections of this specification, and shall also meet the following correspondence tests for quality control:

1. Compressive Strength: ASTM C-109, *Compressive Strength of Hydraulic Cement Mortars.* The two components of the resin are to be thoroughly mixed in their appropriate ratios. Two volumes of graded silica sand, in accordance with ASTM C-778, shall be added to one volume of mixed resin. The samples shall then be prepared according to the requirements of ASTM C-109 and allowed to cure for 7 days at 73° (±4°)F.
2. Tensile Strength and Elongation: ASTM D-638, *Tensile Properties of Plastics*, Specimen Type I or Type II. Samples shall be cured at 73° (±4°)F and 50 (±5)% relative humidity. Speed of testing shall be 0.5 in/min.
3. Water Absorption: ASTM D-570, *Water Absorption of Plastics*. Sample specimens shall be prepared according to Section 4.1 and allowed to cure at 73° (±4°)F and 50 (±5)% relative humidity. Tests are then to be carried out as per Section 6.1.
4. Shore D Hardness: ASTM D-2240, *Rubber Property – Durometer Hardness*. Specimen shall be prepared as per ASTM D-570 Section 4.1 and allowed to cure at 73 (±4°)F.
5. Gel Time: The following procedure shall be used to determine gel time:
   a. Measure 4 oz of Part A and 2 oz of Part B, each at 77°F, into an unwaxed paper cup and record the time and mix immediately. 3.5 oz of this mixture shall be poured into a 6 oz unwaxed paper cup and placed on a wooden bench top. Starting twenty (20) minutes from the time recorded above, the mixture shall be probed every two (2) minutes with a small stick until a small ball forms in the center of the container. The total time, including mixing, required for the ball to form shall be regarded as the gel time. The test shall be performed in a room or enclosed area maintained at 77° (±4°)F and 50 (±5)% relative humidity.
6. Abrasion Resistance: ASTM C-501, *Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abrader*. Tests shall be done using a CS-17 wheel and a 2.2 pound load for 1,000 cycles.
7. Adhesion to Concrete: ACI-503-R, Pull Out Test.
8. Flexural Creep: California Test Method 419.
9. Flexural Yield Strength: ASTM D-790.
10. Surface Tension: ASTM D-971.

END OF SECTION

May 22, 2003

SPECIAL PROVISION

SP-70-1(34)15

SECTION 03381S

CLEAR PENETRATING CONCRETE SEALER FOR BRIDGES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures for applying protective penetrating concrete sealers (**vinyl toluene acrylic silane polymer**) on traffic face and top face of bridge parapet walls.

1.2 REFERENCES

A. ASSHTO T 260: Sampling and Testing for Total Chloride Ion in Concrete and Concrete Raw materials.

B. ASTM C 267: Chemical Resistance of Mortars, Grouts, Monolithic Surfacings and Polymer Concretes.

C. ASTM C 666: Resistance of Concrete to Rapid Freezing and Thawing.

D. ASTM E 274: Skid Resistance of Paved Surfaces Using a Full-Scale Tire.

1.3 SUBMITTALS

A. Certificate of Compliance to the ENGINEER or the Construction and Materials Division.

B. One liter of the product to the ENGINEER for each lot of material.

C. Material Safety Data Sheets (MSDS).

D. Each container shall be clearly marked with lot numbers, date of manufacture, pertinent safety and handling information and emergency contact phone numbers.

PART 2 PRODUCTS

2.1 PENETRATING CONCRETE SEALERS

A. Vinyl toluene acrylic silane polymer blend penetrating sealant for concrete surfaces. Substitution of the alktrialkoxy film forming silane by silicones or siloxanes will not be permitted.

B. Slight color dies are allowed for application purposes, with clear appearance within 7 days of application.

C. Comply with Federal VOC requirements.

D. Comply with requirements of TABLE 1.

TABLE 1
PENETRATING CONCRETE SEALER REQUIREMENTS

***Properties**	*Requirements*	*ASTM*	*AASHTO*	****UDOT**
Accelerated Weathering	As Specified	C 666	T 260	
Freeze-Thaw Test Medium	≤3% Road Salt			Sealer Studies
Minimum Depth Penetration	≥5/32 in.			Sealer Studies
Freeze-Thaw Weight Loss	≤6% 300 Cycles			Sealer Studies
Chemical Resistance	Subsections: 1.1.2 1/1/3	C 267		
Friction Number	≥40	E 274		
Infrared Spectrogram	Materials Division Base Comparison			Materials Studies

* Certified test results from a private accredited testing laboratory will suffice for acceptance.
** Utah Department of Transportation, Materials and Research Division concrete sealer studies of 1986 and 1990.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean concrete surfaces of latence, dirt, dust, grease, oil and other contaminants using a low-pressure hydro-wash, according to the manufacturer's recommendations, without causing undue damage to the concrete surfaces or exposing the course aggregate of the concrete.

B. Allow cleaned surfaces to sufficiently dry after cleaning process before applying sealant (2 hours minimum, or longer according to the manufacturer's recommendations, whichever is greater). Apply sealants no later than 3 calendar days after cleaning the concrete surfaces.

C. Supplier of the sealant product must have a technical support person available at the job site within 24 hours of notification for quality control purposes.

D. Place the sealant material only after obtaining the approval from the ENGINEER.

3.2 APPLICATION

A. Application Rate:
   1. Based upon the residue content at a coverage rate of 0.012 pounds/ft^2.
   2. Apply according to manufacturer's recommendation for each of the following surfaces: Horizontal, Vertical, Overhead.

B. The sealant solution shall not be diluted in any way.

C. Use low-pressure airless sprayers or horticulture type spray bars to allow proper application of material.

D. Application Drying Time: Select a sealer with maximum drying time of 1½ hours, and the ability to allow traffic on the treated surfaces within 4 hours of application without tracking or damage to vehicles.

E. Apply sealant only when ambient air and concrete temperatures are above 50 degrees F.

F. Prevent sealant from blowing or tracking onto vehicles. Sealant shall not be applied when blowing winds, inclement weather or other conditions prevent proper application.

END OF SECTION